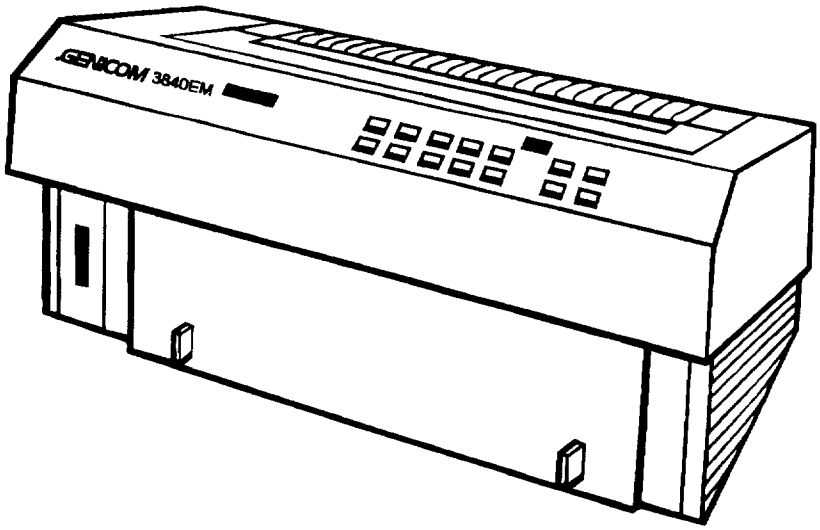
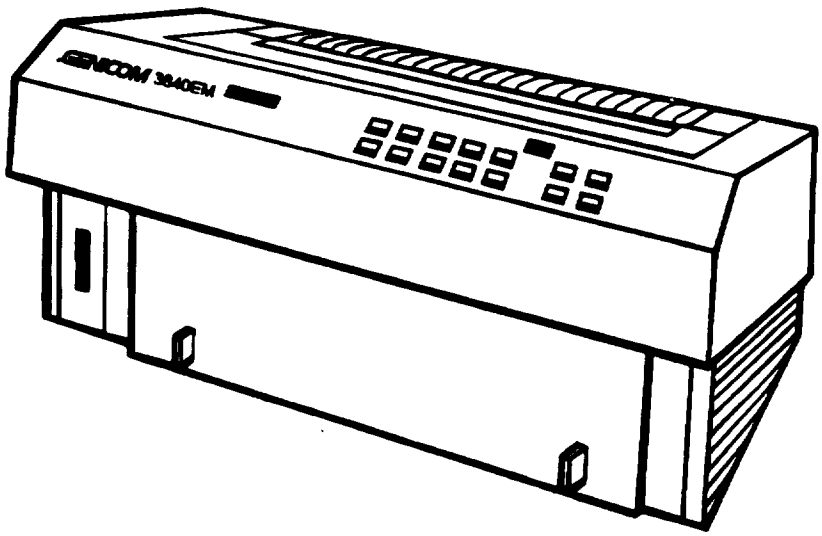


Model 3840 EM Printer
User's Manual
GEK-89116A



Model 3840 EM Printer
User's Manual
GEK-89116A

FCC Compliance Statement

This equipment generates and uses radio frequency energy and if not installed and used properly, i.e. in strict accordance with the instructions, may cause interference to radio or television reception. It has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a residential installation.

Instructions to User

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.
- Ensure that cover mounting screws, attachment connector screws, and ground wires are tightly secured.
- Ensure that the data cable shield is properly grounded at the printer and data source connectors. If necessary, consult your dealer service representative for additional suggestions.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. It is the responsibility of the user to correct such interferences.

The user may find the following booklet prepared by the Federal Communications Commission helpful: How to Identify and Resolve Radio-TV Interference Problems.

The above booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

SICHERHEITSANLEITUNG

Modelle 3840EM / 3940IM

Das Gerät entspricht Schutzklasse I und muß immer an eine 3-adrige, geerdete Steckdose angeschlossen werden. Der Netzanschluß befindet sich an der Druckerrückwand. Stellen Siesicher, daß die Netzspannung mit den Angaben auf dem Typenschild bereinstimmt.

Einschalten des Druckers:

- Alle Abdeckungen müssen geschlossen sein

- Keine Gegenstände auf dem Drucker ablegen oder gegen das Gerät lehnen

- Setzen Sie den Netzschalter, der sich an der Druckerrückseite befindet, auf 1. Die "Power-Anzeige" leuchtet auf und zeigt damit an, daß der Drucker eingeschaltet ist.

Abschalten des Druckers:

- Um den Drucker abzuschalten. setzen Sie den Netzschalter auf 0.

ACHTUNG:

Arbeiten und Reparaturen am geöffneten Gerät dürfen nur vom autorisierten Genicom-Kundendienst vorgenommen werden.

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

3840EM / 3940IM ..... (Gert Typ. Bezeichnung)

In Übereinstimmung mit Bestimmunger der vfg 1046/1984..... ..... (Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

GENICOM GmbH, Oberliederbacher Weg 42 6231 Sulzbach/Ts. Tel. 06196/7032-0 ..... Name des Herstellers/Importeures

Statement of Compliance

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le presént apparail numérique n'émet pas de bruits radioéletriques dépassant les limits applicables aux apparails numériques de la classe B prescrites dans le Réglement aur le brouillage radioélectrique edicteé par le ministère des Communications du Canada.

External Devices

Connecting any external device to this printer may affect its electrostatic discharge (ESD) performance, or its radio frequency interference (RFI) performance, or both.

Code Compliance

Codes and standards the printer conform to are listed below:

- UL Standard 478
- CSA C22.2 No. 220
- GS Sign (Safety), (international model only)
- FCC Rules, Part 15, Subpart B, Class A and Class B
- VDE 0871/0877, Class B (international model only)
- ANSI X3.4-1977 (code set)
- ANSI X3.41-1974 (code extension)
- ANSI X3.64-1979 (additional codes)
- EIA 232C/CCITT V.24 (personality board dependent)
- IEC 950 (EN60950/9.88)
- ISO DP 7779-3/9/82 and ANSI 12.10-1985 (acoustics)

Trademark Acknowledgements

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Appendix D. Load Length Adjustment

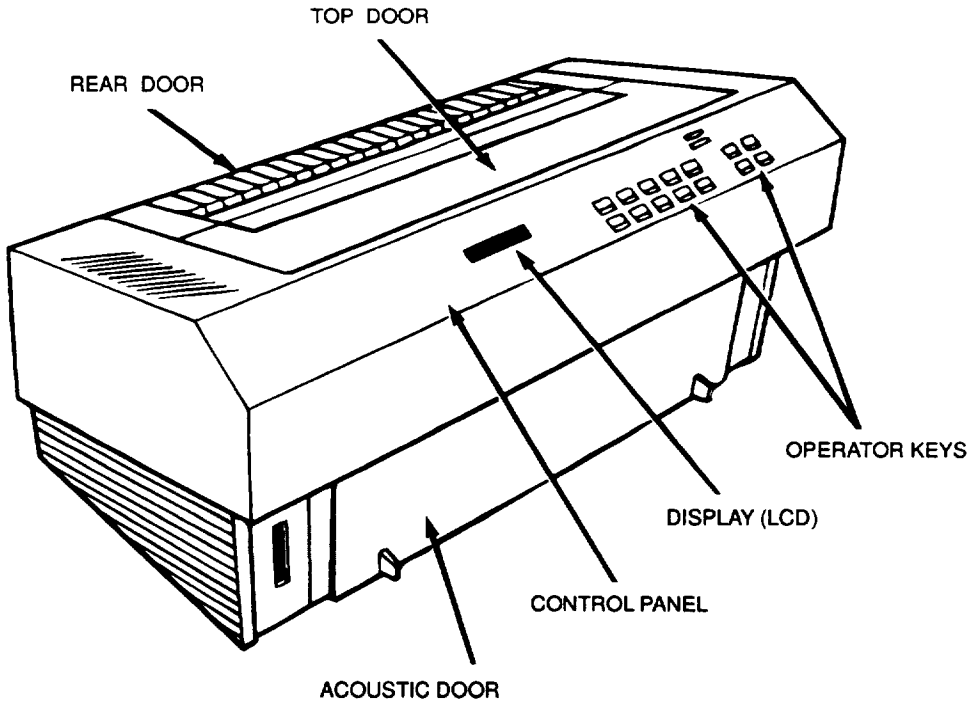
Chapter 1. Introduction

You have good taste in printers.

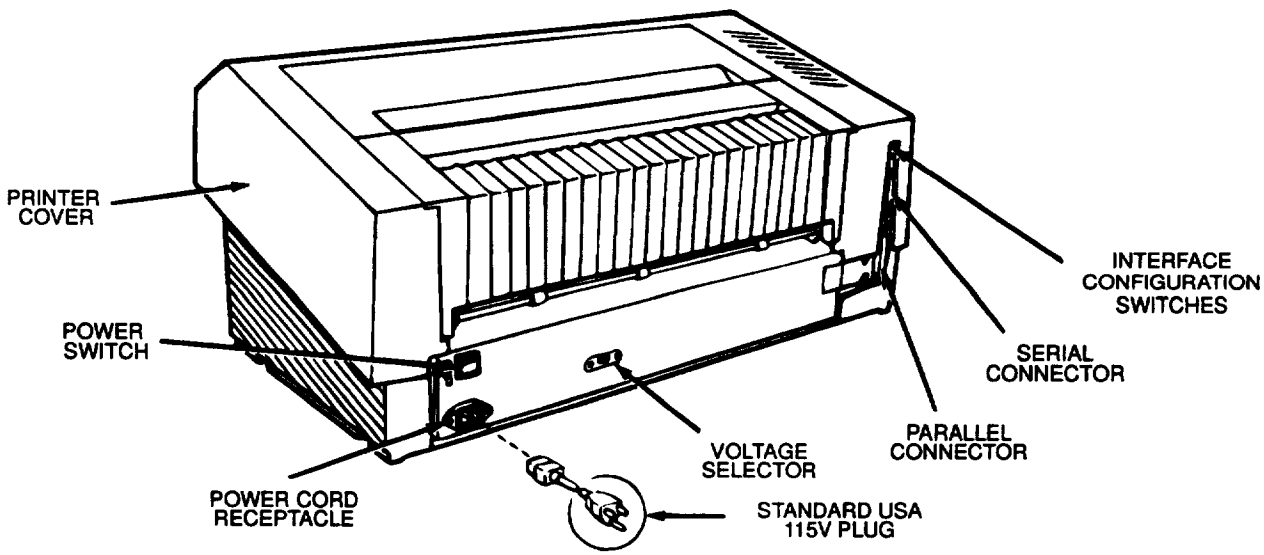
A few of the advanced features of this model are: remote selection of emulations, remote or local selection of paper paths, automatic loading of a second paper path when the first path is empty, and formats. The four formats are non-volatile memory areas in which you can store parameter sets for subsequent recall. When shipped, the printer is set so that an assigned user format is automatically invoked on a paper-path change. Some other characteristics are:

- input voltage: switch selectable 115- or 230 VAC
- power dissipation 130 watts maximum
- hardware interfaces: menu selectable Centronics parallel and RS-232 serial
- emulations: menu- or host-selectable ANSI X3.64, IBMGP, IBM Proprinter XL, Epson FX286e, and DEC LA210
- fonts: menu- or host selectable Gothic, Gothic Italic, Micro Gothic, Wide Gothic, Courier, Courier Italic
- fonts: host selectable
  - ANSI Oversized: Rotatable, expandable to 18,700 points in 10-point increments. See Oversized Font chapter in *Programmer's Manual.*
  - ANSI Bar Codes: Twenty-five styles, rotatable and scalable. See Bar Code chapter in Programmer's Manual.

Complete specifications are in Appendix D.



Front View



Rear View

Chapter 2. Set It up and Get it Running

Along with the printer and this manual, you should have received a power cord, a ribbon cartridge and a programmer's manual

Choose a Place for your Printer that is:

level and solid	Instantaneous carriage speeds exceed 50 inches per second. If a table will rock, then this printer will rock it.
away from direct sunlight	Ribbons dry and fade in the sun.
away from heaters and heating vents	High temperatures degrade plastic and stress electrical components.
away from excessive dust or moisture	Dust shortens print head and gear train life. Very high humidity causes paper handling problems.
within 6.5 feet of a grounded AC outlet	That's how long your power cord is.
If you plan to use the bottom paper path ...	Your printer stand must have a slot through which to feed paper. The bottom paper path is your best choice for gummed labels, bar codes thick multipart forms, and other hard-to-feed stock. See "Paper Handling Features and Techniques", page 9 - 1.

Select the Voltage (Models with Voltage Selector Switch)

CAUTION: Do not select 115V and plug the printer into 230V !

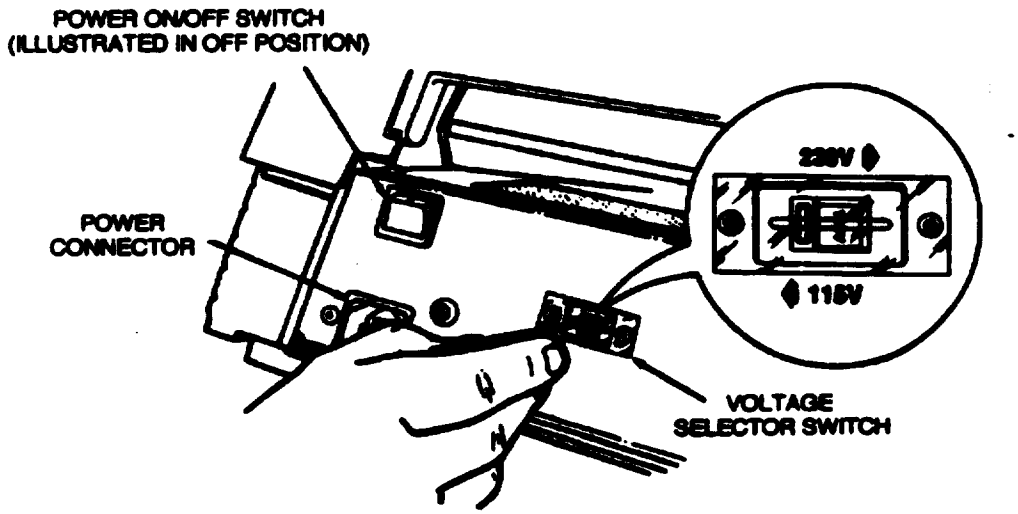
If the printer is plugged into 230V when set to 115V and power is applied, the power supply will be seriously damaged. On the other hand, if 230V is selected and the printer is plugged into 115V, it will not be damaged, but the printer won't work.

Check the voltage selector switch on the back of the printer.

Printers shipped to the US. and to Canada have the switch set to 115V. Printers shipped to other countries are shipped with the switch set to 230V. Either 115V or 230V will be visible in the windows on the switch. Most installations in the US. use 115V.

If you need to change voltage ...

Use a slender object such as a paper clip that has been straightened. When setting the printer for 115 VAC, slide the switch to the left so it shows 115V. Slide it to the right for 230V operation.



Voltage Selector Switch

Select the Voltage (Models without Voltage Selector Switch)

If there is No Voltage Selector.....

Printers without a Voltage Selector Switch will automatically switch to the correct voltage setting. No additional action is necessary by the user.

Power Cords

Don't use two-wire extension cords or adaptors that allow connection to ungrounded outlets.

We ship a 6.5-foot power cord with the printer. The power cord included with printers sold for 115V installations in the U.S.A. and Canada is ready to use. International model printers are shipped with a power cord which can be used in a number of European countries.

For units to be operated at 115V: Use a UL Listed/CSA Certified three-conductor cord set, #18 AWG minimum, Type SVT or SJT. The maximum length is 15 feet. There must be a NEMA 5-15P (parallel blade, grounding type) plug on one end and a CEE 22/5 socket on the other end.

For units to be operated at 230V inside U.S.A. and Canada: Use a UL Listed/CSA Certified three-conductor cord set, #18 AWG minimum, Type SVT or SJT. The maximum length is 15 feet. There must be a NEMA 6-15P (tandem blade, grounding type) plug on one end and a CEE 22/5 socket on the other end.

For units to be operated at 230V outside the U.S.A. and Canada: use a three-conductor cord set, EUR-H05VV-FG31,0 minimum with a CEE 22/5 socket on one end. The cord set should be rated 10A, 250V and have a grounding plug with safety approvals appropriate for the country in which the equipment will be installed. The cord set should be marked HAR.

Plug It In and Turn It On

Make sure the power switch is off.

The power switch is on the back of the printer. Press the switch down to be sure it is off. Plug the female end of the cord to the power connector on the back of the printer under the power switch. Plug the male end into an AC outlet.

Turn on the power switch.

All four lights on the control panel come on for a few seconds. The print head moves to its home position on the left, if it's not already there. Three lights go out. The fault light stays on.

The LCD should say **Fault : Paper Out**

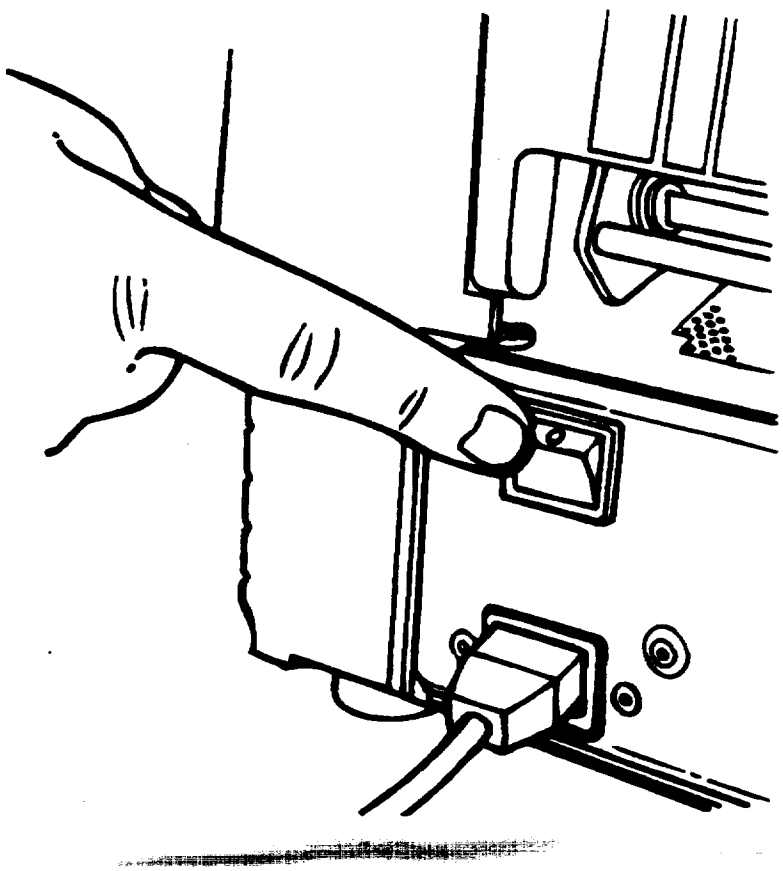
The liquid crystal display on the front panel shows this message until paper is loaded.

If the printer didn't come on ..

Check the AC outlet with another appliance. Make sure the voltage selector switch is set for the right voltage.

If the printer beeps ...

If the printer emits a series of short beeps, something's wrong. Note the number of beeps and call for service.

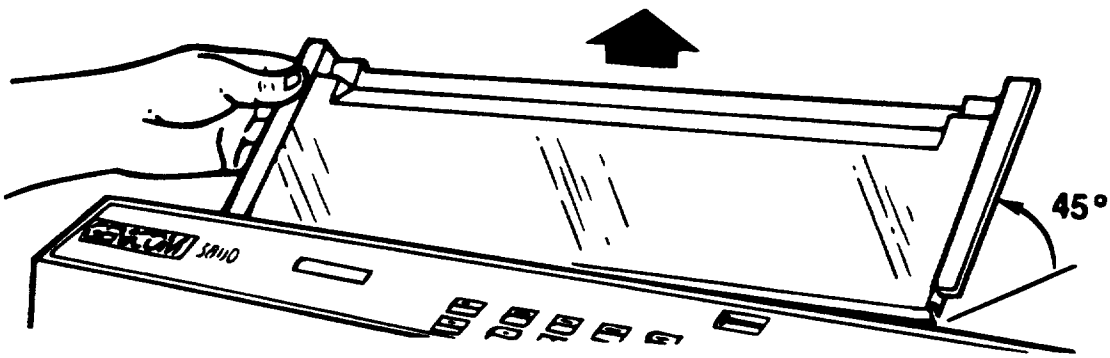


Install the Ribbon

WARNING: The ON-LINE light should be OFF.

If it's ON, press the ONLINE key to turn it off. Otherwise, if somebody sends data to the printer while you're changing ribbons, then the print head could hit your finger when the machine tries to print.

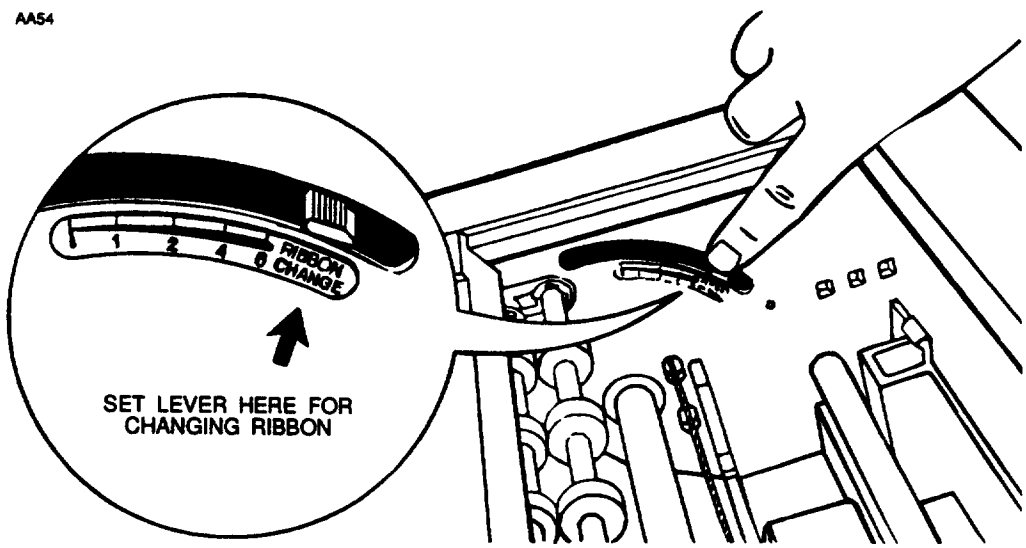
Take off the top door.



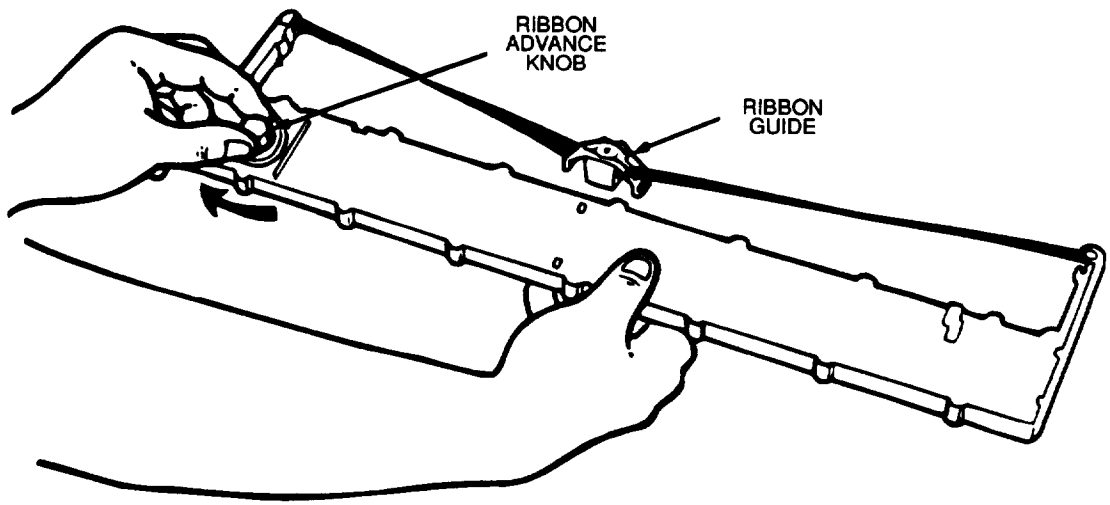
If you're replacing a ribbon..

then note the position of the print gap adjust lever so you can set it back to where it was.

AA54



Take the ribbon cartridge out of the box and unwrap it. Hold the cartridge with the ribbon away from you and the knob up.



Take the shipping tape off the ribbon guide. Squeeze the ears on the ribbon guide together a little bit and slip the ribbon guide up off the cartridge.

If the ribbon is twisted, then untwist it.

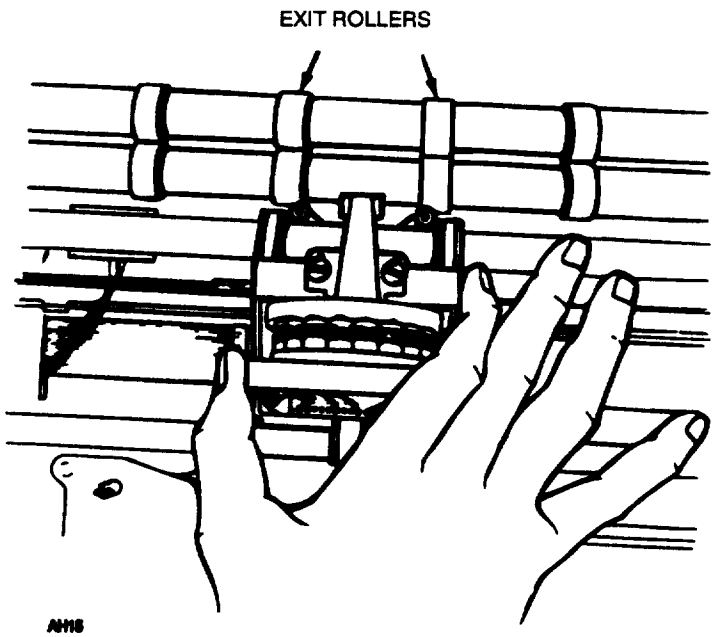
If a full twist feeds into the cartridge, then the ribbon will jam. Sometimes, though, the resident half-twist (mobius loop) ends up between the ribbon guide and one end of the cartridge. You can't get this out; don't worry about it.

WARNING: If the printer has been printing, then the print head may be HOT!

If you're starting the printer for the first time, then it's not.

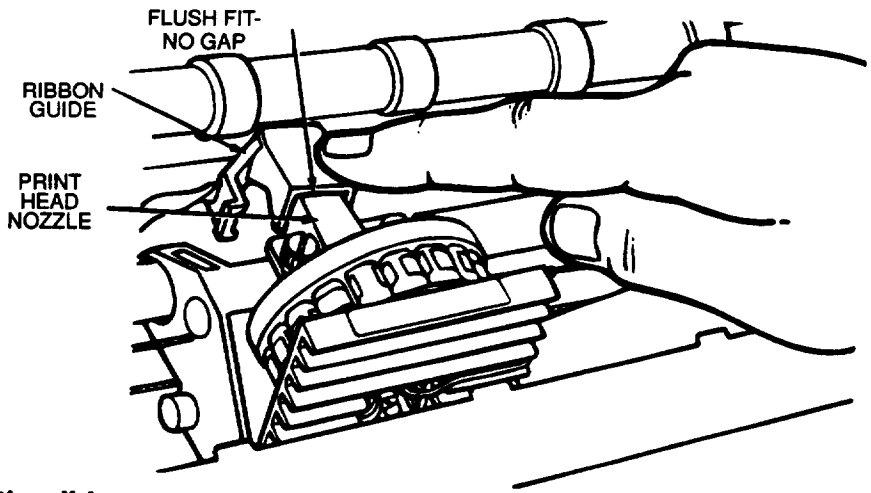
Move the print head left or right until it's centered between the middle pair of exit rollers.

The print head has to be pretty well centered between pairs of rollers in order to coax the ribbon guide onto the print head nozzle. The carriage motor might squeal faintly when you move the print head.



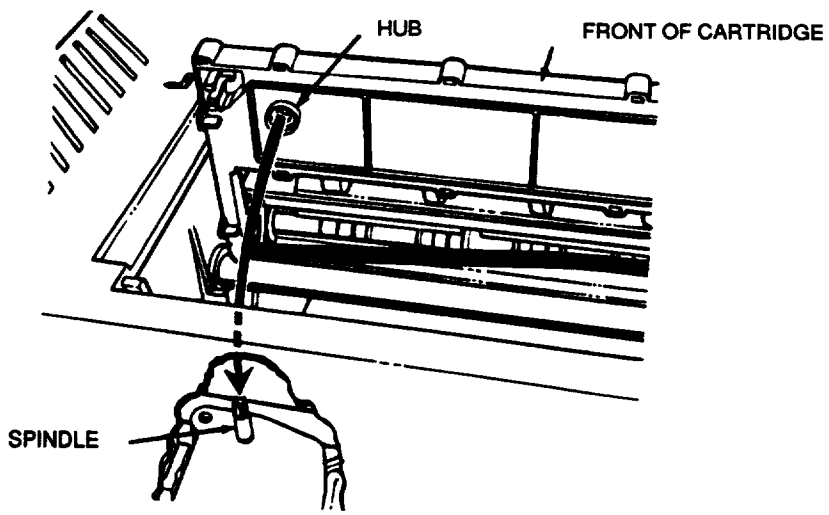
Wiggle the ribbon guide onto the print head nozzle and snap it down flush.

The ribbon guide doesn't always want to fit between the exit rollers, but it will. Center the the ribbon guide over the print nozzle. Start with the front end of the ribbon guide pointing slightly up and then rotate it down onto the print head nozzle. It should snap into place with moderate pressure.



Find the ribbon drive spindle.

As you look down into the printer toward the left side, you'll see a little shaft sticking up vertically through a shiny plate.

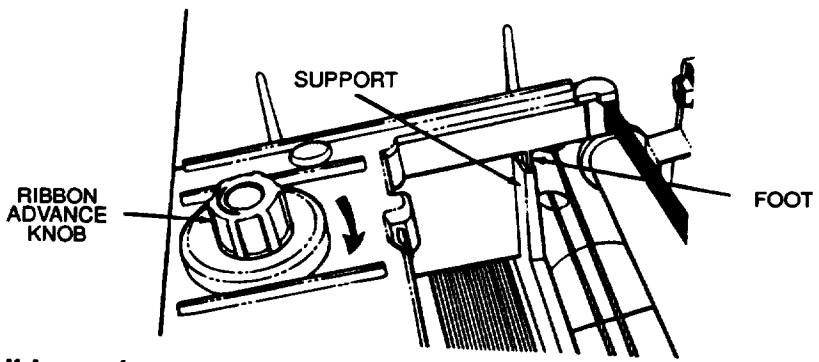


Seat the cartridge on the ribbon drive spindle.

Lay the cartridge down in the printer about where you think it should go and wiggle it around until the drive spindle slips up into the hub of the cartridge. If you turn the ribbon advance knob clockwise now, you should feel the ribbon drive gears turning in the printer.

Snap the ribbon cartridge down on the locating tabs.

Let's call the edge of the ribbon cartridge closest to you the front. There are slotted projections on the bottom of the cartridge at the left and right front corners. These snap onto corresponding locating tabs in the printer. Gently push the front corners of the cartridge down at both ends until you feel it snap into place.



Turn the ribbon advance knob clockwise to take any slack out of the ribbon.

Slide the print head back and forth...

from one end of it's travel to the other. If the ribbon isn't on right, then you'll know it immediately.

If you're replacing a ribbon..

Set the print gap adjust lever back to where it was.

If this is the first time..

Find the white stripe on the front of the print gap adjust lever. For now, set this white stripe to about one number bigger than the number of parts in your form. If you're printing single part forms (single thickness) then set the stripe somewhere between 1 and 2. You'll do a fine adjustment later.

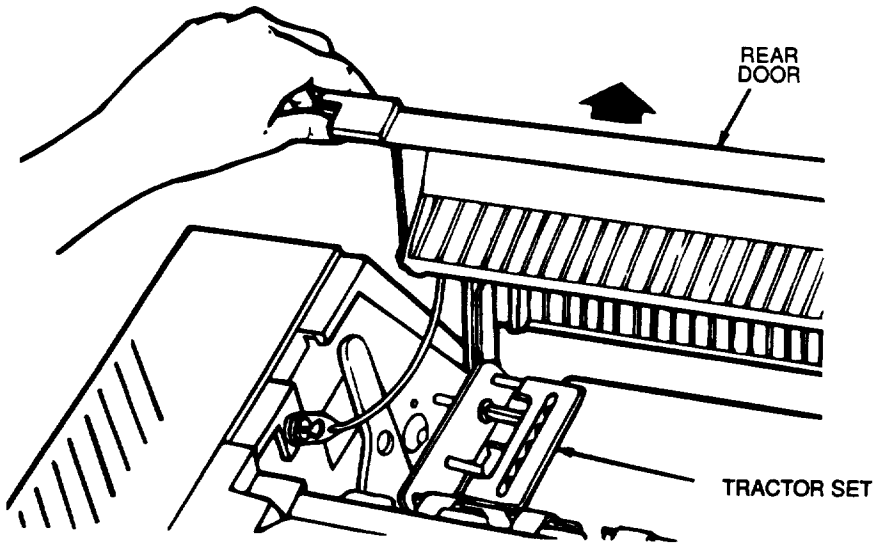
Put Paper in the Tractors

Every printer is shipped with a set of tractors installed in the rear. A second set of tractors is packed in a box for installation in the front/bottom paper path - see "Install the Front Tractors", page 9 - 4. The procedure for loading sprocket-feed paper is the same for the rear, front, or bottom paper paths.

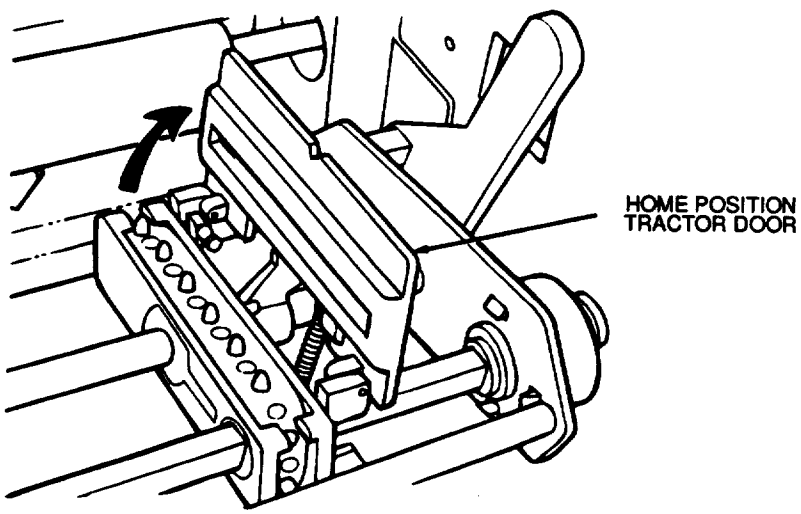
The words left and right get confusing when you're looking at the back of a printer. Let's call the tractor that holds the left edge of the printed page the home-position tractor. We'll call the other tractor the far tractor.

Let's assume you're loading paper in the rear tractors. The factory did a final test on your printer using 14-inch wide paper in the rear path. If you're using the rear path, then the home-position tractor should be in the ball park. If you're using narrower paper, then you'll need to move the far tractor.

Open the rear door.



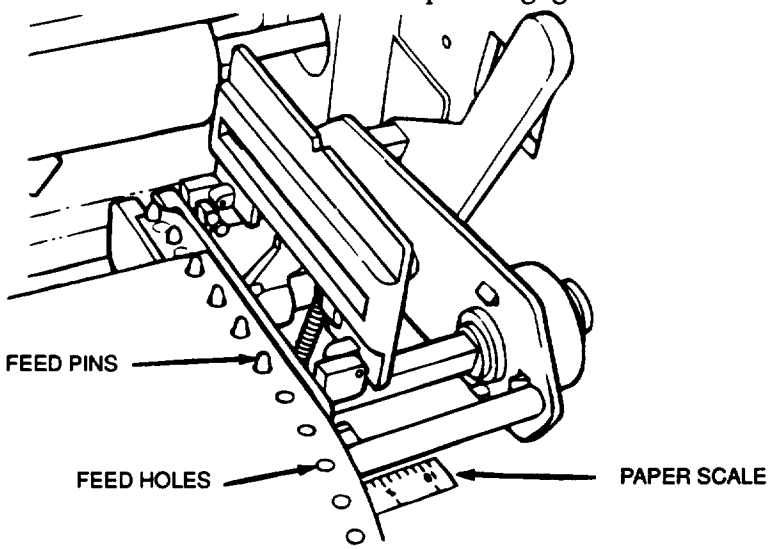
Open the doors on both tractors.



Check the leading edge of your paper. There must not be any tears or wrinkles.

Put paper in the home-position tractor.

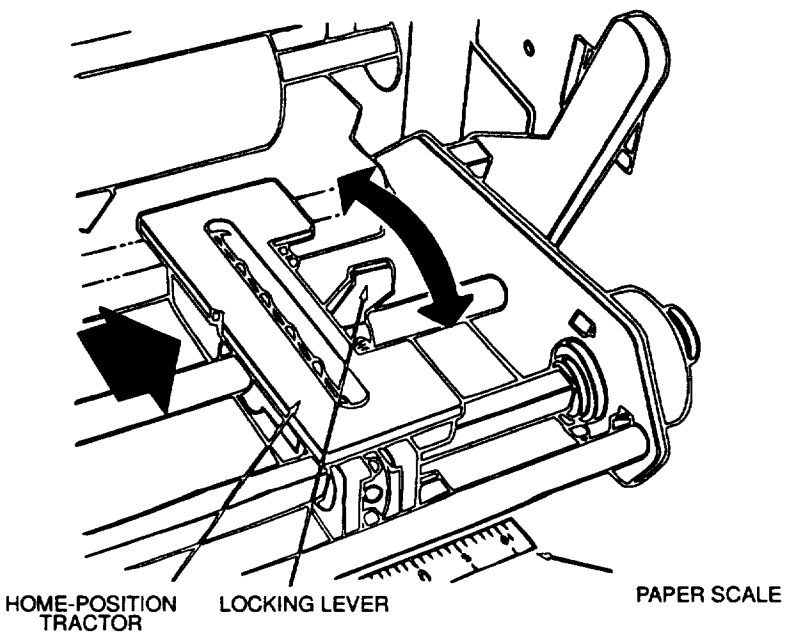
For the rear path, the side of the paper you want to print on goes down. Sprocket-feed holes in the paper should engage 3 to 5 of the pins on the tractor belt. You need to have the same number of pins engaged on both tractors.



Close the home-position tractor door.

Move the far tractor if necessary to fit your paper.

There are locking levers on the outboard sides of the tractors. When the tractors are unlocked, you can slide them left and right on the shafts. You can unlock a tractor by pushing the locking lever away from you.



Put paper in the far tractor and close the door.

Make sure the leading edge of the paper is parallel with the tractor shafts. You must have the same number of pins engaged on both tractors.

Move the far tractor to tighten the paper.

Stretch the leading edge of the paper enough so it doesn't sag, but not so tight that you distort the sprocket feed holes.

Lock the far tractor.

Pull the locking lever toward the rear of the printer.

Load a Form

Close the Top Cover

On models with a top cover interlock, the printer won't move paper until the cover is closed.

`LOCKED`

If the LCD says LOCKED, then see "Control Panel Lock-outs", page 5 - 1.

Press and release PARK/PATH a few times. The LCD cycles through:

`PATH FRONT`

`PATH REAR`

`PATH MANUAL`

Stop when see

`PATH REAR`

You've selected the rear paper path. Wait a few seconds for the function to time out.

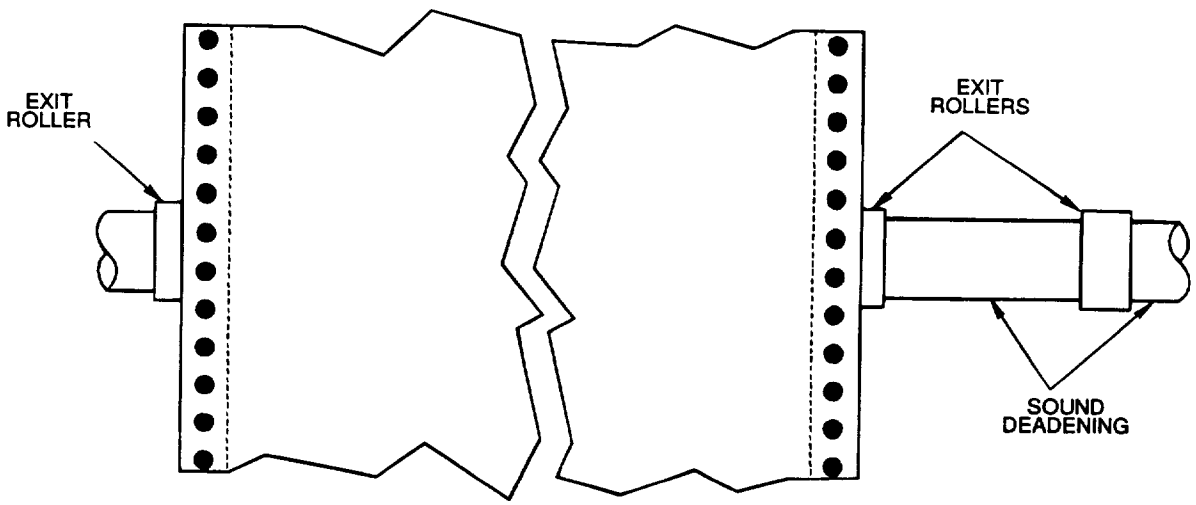
`FAULT: Paper Out`

The function timed out. If there's paper in the rear tractor, then you should be able to load a form.

Press the Form Feed key. Paper should move into position to be printed.

Make Sure the Exit Rollers Engage the Form

Open the top cover and look at the form. If the exit rollers don't engage the left and right edge of the form, then use the PARK/PATH key to park the form, and move the tractors as needed to align the form on the rollers. If the edges of the form don't engage the exit rollers, then printed lines may be skewed.



If a form didn't load

Check your paper path selection. Verify that you have a form loaded in the tractors that correspond to your paper path selection. If paper is jammed, then take the paper out of the tractors and pull the jammed paper out of the printer from the tractor side.

If a form loaded, then the fault light should be out.

If not, press the CLEAR key. When the printer is shipped, a paper-out fault is automatically cleared when you load a form. But there's a software option that can be set so this doesn't happen.

Format 4

The LCD tells you which format is assigned to the current paper path. The number could be anything from 1-4.

Print a Test Pattern

You can see how your page might look in terms of the current settings: font, lines per inch, characters per inch, margins, and so forth, by printing the internal rolling-ASCII test pattern.

The test pattern always stays inside whatever left and right margins are set in the printer. We don't want you to print beyond the right edge of the paper, so the printer makes you select either an 8-inch limit or a 13.2 inch limit for the width of the test print. Don't use the 13.2 inch option unless you have wide paper loaded in the current paper path.

CAUTION: Don't print off the paper!

This print head generates high impact force at high print wire frequencies. If you print off the paper, then you can damage a print head. If your form is less than eight inches wide, then set a right margin less than your form width before you print a test pattern.

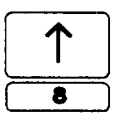
`Format 4`

The format number can be from 1-4. If you have a fault message, then clear the fault. If you have some other message, you're probably somewhere in the LCD menu. Press FIRST, then ENTER, to get out.

The ONLINE light should be OUT.

If not, then press the ONLINE key.

Press PROG to get into the LCD Menu.

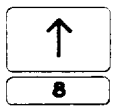


Press and release the up arrow key a few times until the LCD says Prog: Utility. If you pass it, then use the down-arrow key to get back.

`Prog :Utility`

This is the street where the test pattern lives.

Press Enter



Press and release the up arrow key a few times until the LCD says Utilit: TestPrn. If you pass it, then use the down-arrow key to get back.

`Utilit:TestPrn` Now we're on the right block.

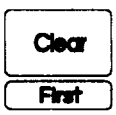
Press Enter

`Test P:8" Max` We found it!

Press Enter to turn on the test pattern.

Press Enter again to turn the test pattern off.

To get out of the LCD menu:



Press First

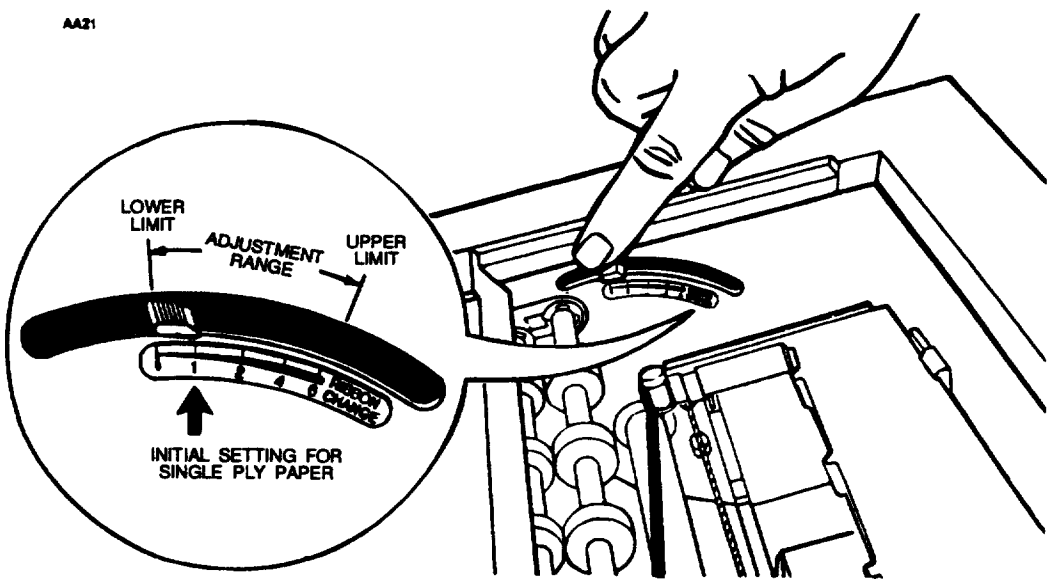
and then Enter

Print Gap Fine Adjust

The print gap setting is important. If the gap is too wide, then printing is light and ragged. If it's too tight, then you get smudged printing, and you may not be able to load paper. A grossly incorrect setting in either direction can damage a print head.

Your print gap setting is in the ball park when the white stripe on the print gap adjust lever points to a number that's the same as, or up to one number bigger than, the number of parts in your form. If you're printing on single-part (single-thickness) forms, for instance, then you can get readable print quality with your print gap set somewhere between 1 and 2.

AA21



You can improve print quality and prolong print head life by fine tuning the print gap as follows:

Turn the test pattern on.

See page 2.-15

Close the print gap till the test pattern smudges.

Push the print gap adjust lever to release the detent and move it toward the low numbers until the test pattern starts to smudge.

Back off two or three clicks.

Move the print gap adjust lever back toward the high numbers until the test pattern stops smudging. Experiment to find the best print quality.

Turn the test pattern off.

Press PROG/ENTER to toggle the test pattern.

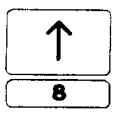
Press FIRST to get back to the top of the menu from any point in the menu.

Press ENTER to confirm that you want to EXIT the LCD menu.

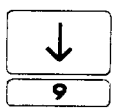
Adjust Top-of-Form

When you load your very first form, this printer feeds paper so that the top of the first line of characters you can print is about 1/32 inch below the top of the paper.

We're accustomed to making fine corrections to vertical registration by turning a paper-advance knob. As long as you're not in one of the menus, then the up-arrow and down-arrow keys work like a paper advance knob.



Moves paper up by 1/72 inch per click. Hold it down to go faster.



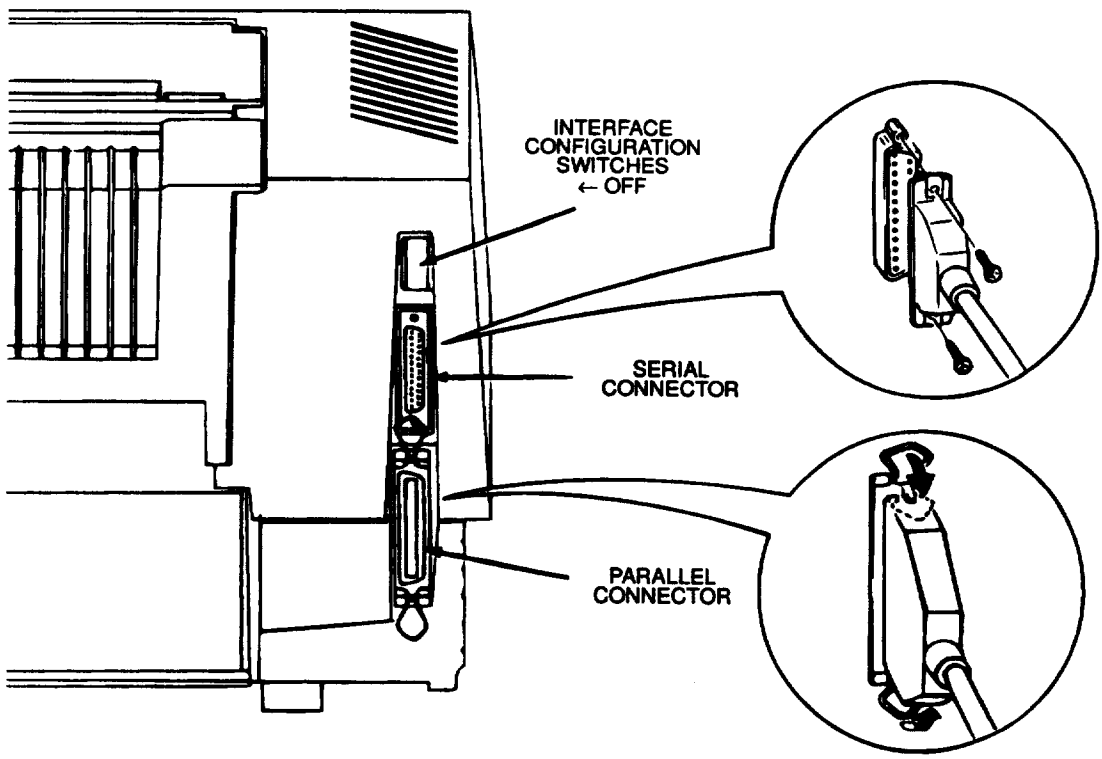
Moves paper down by 1/72 inch per click. Don't move paper down so far that you print on the striker bar.

If you're using the up-arrow key to crank in the same amount of offset every time you load a particular form, then you can store that offset in a parameter we call *top print reference* and save it to a format. If you save a top print reference, then paper will advance to the right place every time you load that paper path. See "Set a Top Print Reference", page 7 - 3.

Hook Up to a Data Source

The printer is shipped with parallel interface selected. If you have a choice of which of the two hardware interfaces - serial or parallel - to use, and if your printer isn't located more than 15 feet from your computer, then it's simpler to use parallel.

You can get either a CENTRONICS/IBM parallel or RS-232 serial printer cable from any computer store. Your cable must be rated FCC Class B in order for your system to meet legal radio frequency interference limits. It should have a braided shield to provide best immunity from electrostatic discharge.



Turn the printer and data source OFF.

We sometimes forget to do this and get away with it. There's a risk, though, that a signal wire will make contact in a connector before the associated ground wire, and logic inputs can fail under that condition.

Hook it up.

Tighten any screws. If you're using parallel interface, then flip the bail wires on the Centronics connector on the printer so everything is secure.

Don't touch those DIP switches.

There's a bank of DIP switches just above the serial connector. When the printer is shipped, they're all off, as they should be for all but a few unusual installations. For information, see "Interface", page 11 - 1.

Turn the data source and printer ON.

It's safest to do it in that order.

If you're using serial interface..

You'll need to read the Printed Menu chapter to see how to set serial parameters. See "Printed Menu", page 4 - 1.

If you're using parallel interface..

You should be ready to go. The printer is shipped with parallel interface selected.

Set the printer ON-LINE.

The ONLINE light should be ON. If it isn't, then press the ONLINE key to turn it on.

Print something from the data source.

If you're hooked up to a PC, then call up a text-mode screen and do a PrintScrn. You can't print graphics from a PC until you set the emulation at the printer. See "Select the Emulation" page 3 - 10.

If it didn't work..

Go to the next page and get a quick status to verify that the printer is set to the hardware interface you're using. Note the emulation at the same time. It's easy to change either the interface selection or the emulation from LCD menu.

Pinouts, signal descriptions, and other useful information about the interfaces is covered in Chapter 11 .

Quick Status

LCD should say

Format 4	The number can be anything from 1 to 4. If you have a fault message, then clear the fault. If you have some other message, then you're probably somewhere in the LCD Menu. Press FIRST, then ENTER, to get out.
ONLINE Light should be on.	If not, then press the ONLINE key to turn it on.
	Press the Program key. The LCD should step through a short list of printer settings.

Line Registration on the First Form

Precise line registration depends on the form being fully engaged by the exit rollers. We don't guarantee that the printer will hold specified line registration for the first inch of the first form. This disclaimer also applies to cut sheets (loaded from the manual paper path).

Chapter 3. Control Panel

The control panel keys do different things depending on whether you're ONLINE, OFFLINE, or in a menu.

When you press a key, this is reflected in the message on the LCD. You can change the language of the LCD messages from the LCD menu.

This section assumes that your printer is set up more or less as shipped, because you can selectively lock out keys from the printed menu.

Online Hot Keys

When we ship the printer, the following control panel keys work either ONLINE or OFFLINE.

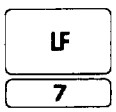
LOCKED

See "Control Panels Lockouts", page 5 - 1.

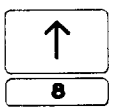
The Online key toggles between offline and online as long as there's no printer fault and you're not in a menu. When the printer is ONLINE, it can print received data. When it's OFFLINE, you can change printer settings and print test patterns and status reports.

If there's a form loaded, then the printer parks the form the first time you press this key. Keep pressing and releasing it to step through the list of paper paths: Front, Rear, Manual. Use the Front selection to load the bottom path if your tractors are set to the bottom path position. If you change paths, then press Form Feed to load the new path.

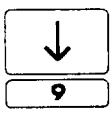
Form Feed prints any data remaining in the buffer and advances paper according to the current form length. When paper is parked, FF loads the form in whatever paper path you have dialed up. When the printer is shipped, this key works online or offline, but you can set the printer so it works offline only.



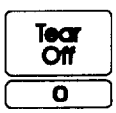
Line feed prints any data remaining in the buffer and advances paper one line according to the current lines-per-inch setting. Like the FF key, the LF key can be set to either work online or not. Use the line feed key discretely; if you use it to position a form in the printer, or to view a line under the print head, this affects the registration of the current, and possibly subsequent, pages. If you want to see what's under the print head, use the TEAROFF key.



Press and release to advance paper 1/72 inch per click. Hold it down to go faster.



Press and release to retract paper 1/72 inch per click. Hold it down to go faster.



Advances a form 2 inches so you can tear it off. Remove a partially printed form by pressing FF first, then TEAROFF. Press TEAROFF again to retract paper.

Control the Tearoff Feature

When we ship the printer, the Tearoff key is enabled online and offline. If you press the Tearoff key, then paper moves up 2 inches and stays there for 15 seconds. While paper is in the tearoff position, no printing can occur. But, if the printer is otherwise able to receive data, then it continues to receive data until the buffer is full. A Tearoff message is displayed on the LCD. After 15 seconds, the printer retracts paper and printing can resume.

Tearoff Timeout

You can disable automatic paper retraction following tearoff. Go to `User Defined Options` on the printed menu and disable `Paper Tearoff Timeout`. The status of this option applies across all formats.

If you disable paper tearoff timeout, then paper remains in the tearoff position until you push the Tearoff key a second time. While paper is in the tearoff position, no printing can occur. A Tearoff message is displayed on the LCD. If the printer is otherwise able to receive data while paper is in the tearoff position, then it continues to receive data until the buffer is full.

Auto Tearoff on Form Feed

You can set the printer to automatically move paper to the tearoff position after a (received or local) form feed. This feature works when the printer is online only. On the printed menu, `Auto Tearoff on Form Feed` is under the `Print Format` menu. Since Auto Tearoff is under format control, you can enable this feature for some forms/paper paths and not for others.

When auto tearoff is enabled and a form feed is received, then the printer waits for an interval. If data follows a form feed within that delay, then Auto Tearoff has no effect for that form feed. If no more data is received during the delay, then paper moves to the tearoff position. The printer leaves paper in the tearoff position until it gets more data to print; then it retracts the paper and prints the data.

If auto tearoff is enabled, then the Tearoff key does not work when the printer is online. If you want to view what's under the print head, then you must take the printer offline to use the Tearoff key.

Auto Tearoff Delay

When we ship the printer, the auto tearoff delay is 5 seconds. Also, during auto tearoff, as well as during normal tearoff, the print head moves to the home position before paper moves to the tearoff position.

To shorten the delay to 1 second, enable item 23 under `Software Options` on the printed menu. This will also disable print head homing during either auto or normal tearoff.

Auto Tearoff Slew Speed

When we ship the printer, paper moves at 15 inches per second (ips) during auto tearoff. To reduce the slew rate for auto tearoff to 5 ips, enable item 24 under `Software Options` on the printed menu.

Tearoff Distance

You can change the default 2-inch tearoff distance; see "Set the Tearoff Distance" page 7 - 4. This parameter is under format control, so you can set different values for different forms.

Offline Quick Selections

You can change some printer settings without going into a menu. The following keys work when you're offline only. The first time you press one of these keys, you'll see the current setting. This is handy; if you want to know what the current font is, for instance, just press FONT one time. If you continue to press and release a key, you'll step through a circular list. When you see what you want, stop. In about three seconds the function times out, and the selection you stopped on becomes the current selection. Play with these keys (except FORMAT) to see how they work.

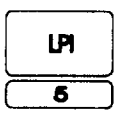
The OnLine light must be OUT.

If not, then press the ONLINE key.

Selects a font.

Toggles between Letter Quality and Data Processing resolutions. LQ is prettier and DP is faster.

Sets characters per inch. Some emulations support continuously adjustable character pitch. If the host sent down a setting that isn't on the list, say 11 cpi, then the LCD shows LS after the number. LS stands for Line Select.



Sets lines per inch. All emulations support continuously adjustable line spacing. If the host sent down a setting that isn't on the list, say 7 lpi, then the LCD shows LS after the number.

Careful with FORMAT!

Selects a format. Read "Formats", page 6 - 2 before you press this one; you can inadvertently overwrite current parameters such as margins, font, pitch, tabs, form length, and so forth.

LCD Menu

There are two menus on the printer: the LCD menu, and the printed menu.

You can change the language of the LCD messages by using the LCD menu.

We included on the LCD menu the parameters that we expect you to adjust most frequently. The LCD menu is nice when you're running preprinted forms and want to change a setting without using any paper.

There are submenus off the main LCD menu. The feature you want to control is on the bottom layer of a particular branch. When you get as low as you can go, you'll see a selection preceded by the greater-than symbol, which we'll call the arrow. The arrow points to the selection that's active now.

The printed menu has everything the LCD menu has plus a lot more. Some folks who are new to this printer use the printed menu exclusively; it lets you see your whole range of choices before you make one, and gives you a hardcopy record of what you did. You have to go through the LCD menu to get to the printed menu. The printed menu is presented in English only.

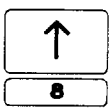
Get into the LCD Menu

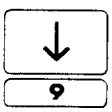
The OnLine light must be OUT.

If not, then press the ONLINE key.

Press the Prog key. The LCD should say **Prog :Exit**

Move Around.

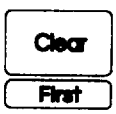




The up-arrow and down-arrow keys step through circular lists of choices. When see what you want, press ENTER.

Enter means YES, this is the category I want, or YES, this is the selection I want.

Former puts you back where you just came from - one level up.



First puts you back where you started - at the main level.

Play around.

Browse around in the LCD menu to get a feel for what's there. You can do this without changing any printer settings, as long as you remember to use FORMER or FIRST to bail out of sub-menus.

Get out of the LCD menu.

Press FIRST, then ENTER.

LCD Menu Map

>active now

The current selection on a multiple-choice menu is preceded by the greater-than symbol >

: available

Available choices are preceded by the colon :

Right: 8.500

But when a menu wants you to enter numbers, the current setting is preceded by the colon :

Right> 8.000

Then the arrow flashes after you press Enter to save your change.

Here are the abbreviations you'll encounter when you're in the LCD menu:

CharSet - Character Set. You can select either of IBM character sets 1 or 2. This selection applies to ANSI and Epson as well as to the two IBM emulations.

CPI - Characters per Inch.

FormLen - Form Length.

IntFace - Interface. The hardware interface choices are serial and parallel.

LPI - Lines per Inch.

MsgLang - Message Language. The printer can present the LCD messages in any of five languages.

PrFormat - Print a Format report. This shows you what's in each of the four stored formats.

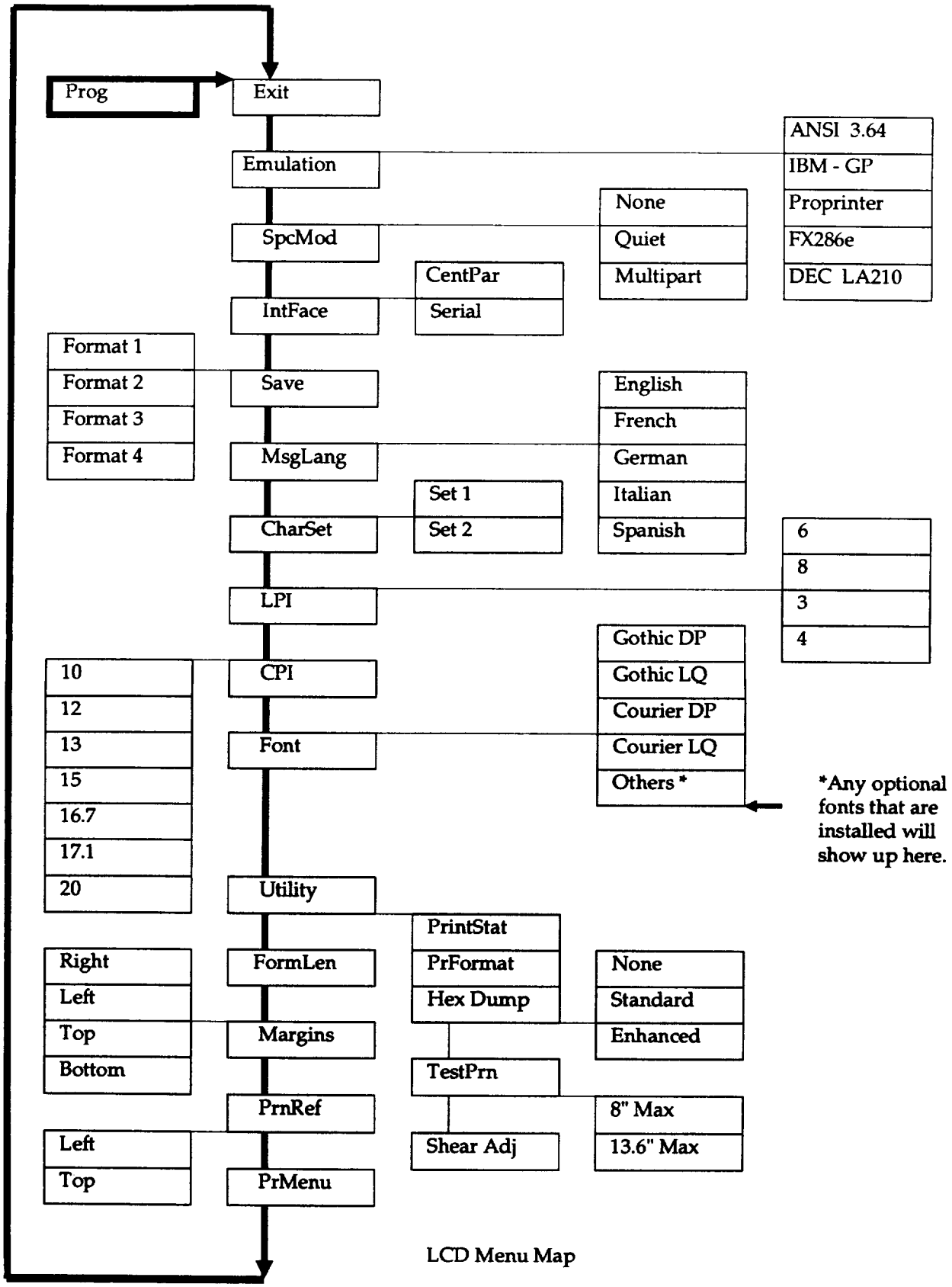
PrintStat - Print a Status Sheet. This shows you what's in the active format; in other words, what the printer is set to do right now.

PrMenu - Printed Menu. There is a printed menu that lets you go deeper into the printer than does the LCD menu. See Chapter 4.

PrnRef - Print Reference. You can set a top offset and also a left offset to position printing on the page. See chapter 7.

SpcMod - Special Modification. This lets you choose higher-than-normal impact force for multipart forms, as well as lower-than-normal impact force for quieter operation. Carriage speed (and therefore throughput) is reduced for both SpcMod settings.

TestPrn - Test Print. This prints a rolling-ASCII pattern that reflects the current font, margins, line and character spacing, and so forth.


Prog
Exit
Emulation
ANSI 3.64
IBM - GP
Proprinter
FX286e
DEC LA210
SpcMod
None
Quiet
Multipart
IntFace
CentPar
Serial
Format 1
Format 2
Format 3
Format 4
Save
MsgLang
English
French
German
Italian
Spanish
CharSet
Set 1
Set 2
LPI
6
8
3
4
CPI
10
12
13
15
16.7
17.1
20
Font
Gothic DP
Gothic LQ
Courier DP
Courier LQ
Others *
*Any optional fonts that are installed will show up here.
Utility
PrintStat
PrFormat
Hex Dump
None
Standard
Enhanced
TestPrn
Shear Adj
8" Max
13.6" Max
FormLen
Margins
Right
Left
Top
Bottom
PrnRef
Left
Top
PrMenu

LCD Menu Map

Select the Emulation

When the printer is shipped, the emulation is set to ANSI. This is the native language of the printer and includes bar codes and rotatable oversized characters. ANSI isn't widely supported, however, by off-the-shelf applications. If you're hooked up to a personal computer and using the printer for general-purpose office work, then you'll probably want to change the emulation to Epson, Proprinter, or IBM-GP.

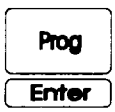
This section shows you how to change emulations from the control panel. You can also change emulations by sending esape sequences from the host. See the ANSI chapter in the Programmer's Manual for details.

The Emulation Selection Applies to All Formats

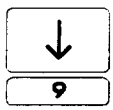
You can't save emulation selections to the user-defined formats 1-4. When you choose an emulation, that selection applies to the active format and each of the 4 user-defined formats. The emulation selection is saved in non-volatile RAM; when you turn the printer on, it will be in the same emulation it was in when you turned it off.

The OnLine light should be OUT.

If not, then press the ONLINE key.



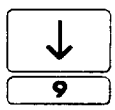
Press the PROG key to get into the LCD Menu.



Press and release the down-arrow key one time. The LCD says Prog: Emulation. If you pass it, then use the up-arrow key to get back.

```
Prog :Emula-
tion
```

Press the Enter key. Enter means YES, this is what I want.



Press and release the down-arrow key till you see what you want. The list is circular; if you keep pressing the arrow key, you'll get back to where you started.

When you see what you want..

Press Enter to make that selection. Your selection will flash for a second or two to show that you've saved it.

Press the First key. This puts you back at the top of the LCD menu.

Press Enter. This confirms that you want to EXIT the LCD menu.

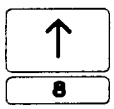
Status Sheet

You can print out a status sheet that shows how the printer is presently set up.

The OnLine light should be OUT.

If not, then press the ONLINE key.

Press the PROG key to get into the LCD Menu.



Press and release the up arrow key a few times until the LCD says Prog: Utility. If you pass it, then use the down-arrow key to get back.

`Prog :Utility`

This is where the status sheet lives.

Press Enter.

`Utilit: Prnt Stat`

Amazing! It's the first item on the list.

Press Enter to print a status sheet.

Press the First key to go back to the top of the LCD menu.

Press Enter to Confirm that you want to EXIT the LCD menu.

Press Tear Off. Tear off the status sheet.

Chapter 4. Printed Menu

Before you can get out of the printed menu, the printer makes you say whether or not you want to save any changes. You can make any number of changes to see how the menu works and then abort these changes as you exit the menu without changing any settings.

This menu is printed in English only.

The menus are printed at 10 cpi, 6 lpi, in the ANSI default font. This is normally Gothic DP, but you can change that by using the SGR Extension command described in the ANSI chapter of the Programmer's Manual. The only other setting that affects the way the menus look are the margins in the format assigned to the current paper path; we discuss this in detail later on.

The Arrow > Means YES

When you get as low as you can go in a menu branch, some options on the list may be preceded by the greater-than symbol. The arrow points to options that are enabled now.

In some submenus, the arrow points to one of a mutually exclusive set of options. You can't have more than one font selected at the same time, for instance.

In other submenus, the options aren't mutually exclusive. In the Printing Mode submenu, for example, you can turn on Unidirectional Graphics and also Unidirectional DP at the same time.

When options aren't mutually exclusive, entering an option number flips the switch on that option. If Unidirectional Graphics is currently off and you enter the number for that option, then you'll turn it on, and vice versa.

Sometimes You Enter Values

Instead of offering multiple choices, the printer wants actual values for things like line spacing and margins. You can figure out from the context of a particular menu what units of measure it wants, such as columns, inches, and so forth.

You can include decimal fractions, in which case the printer might round off your entry to the nearest number that the current emulation supports.

You can set the printer to accept decipoints for things like margins and form length where it would normally expect inches; this is controlled by software options 9 and 10 on the printed menu. See Appendix A.

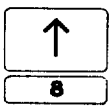
Get Into the Printed Menu

The OnLine light must be OUT.

If not, then press the ONLINE key.

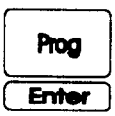
Press Enter.

```
Prog :Exit
```



Press the up-arrow key one time.

```
Prog :PrMenu
```



Press Enter. A menu list of 8 items should be printed. If your margins are too narrow to read the list, see "Margins for Menu Listings" page 6 - 12. The LCD tells you what numbers you entered, but the printout tells you what to do next.

FORMER and FIRST

Sometimes you'll wonder "How did I get here and how do I get out?"

The FORMER key takes you back where you just came from.

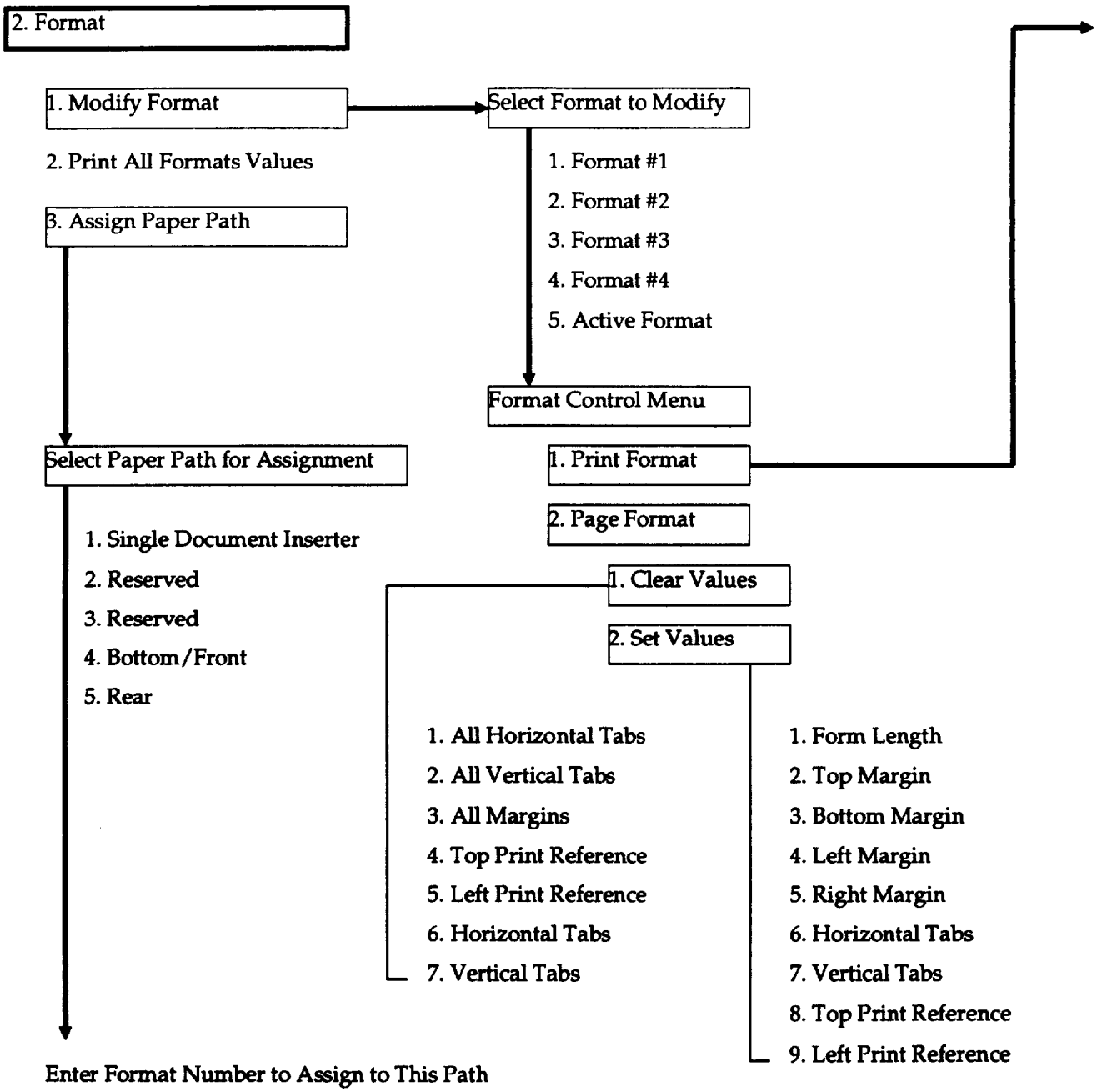
The FIRST key takes you all the way back to the start of the printed menu.

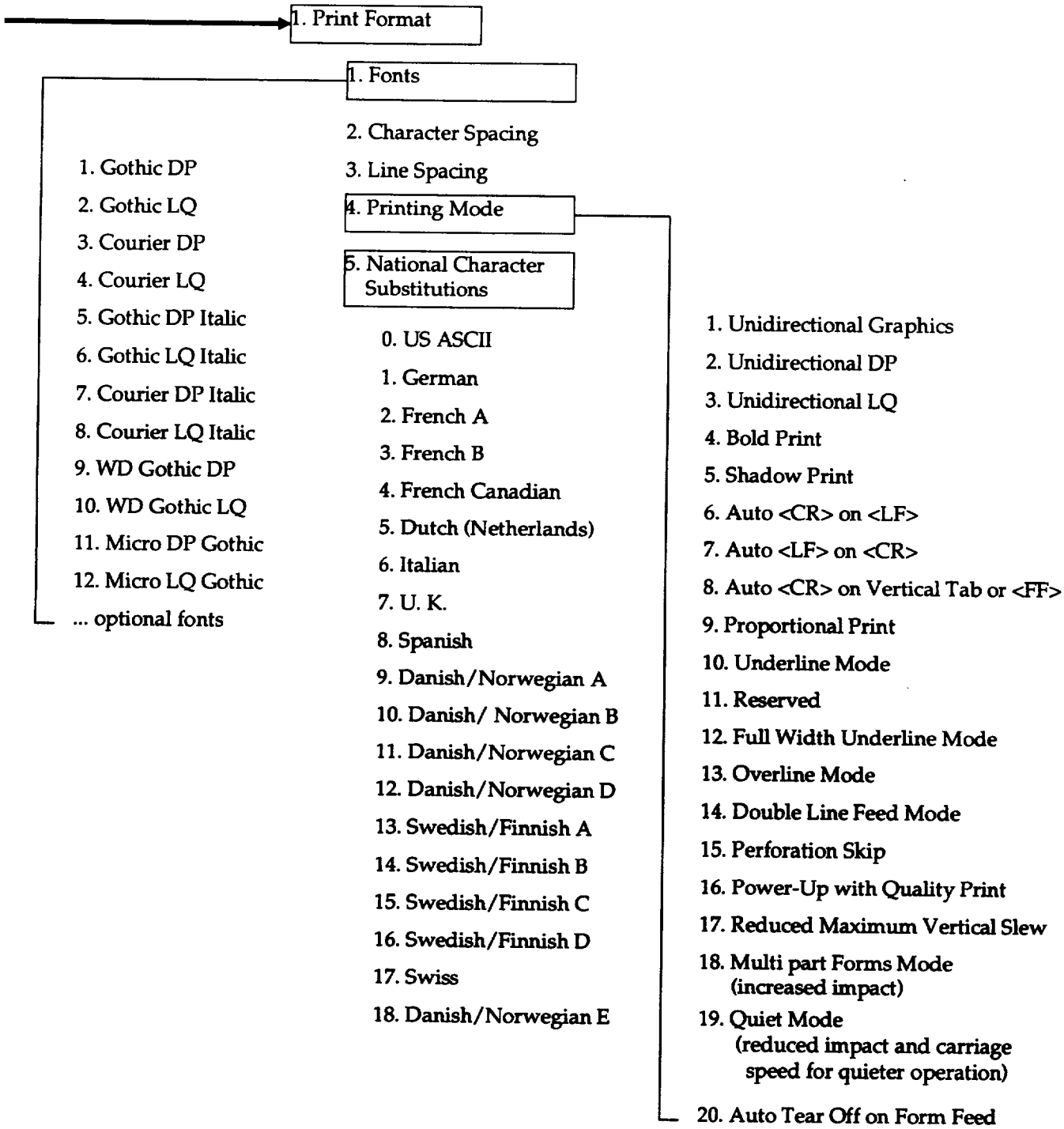
Printed Menu Map

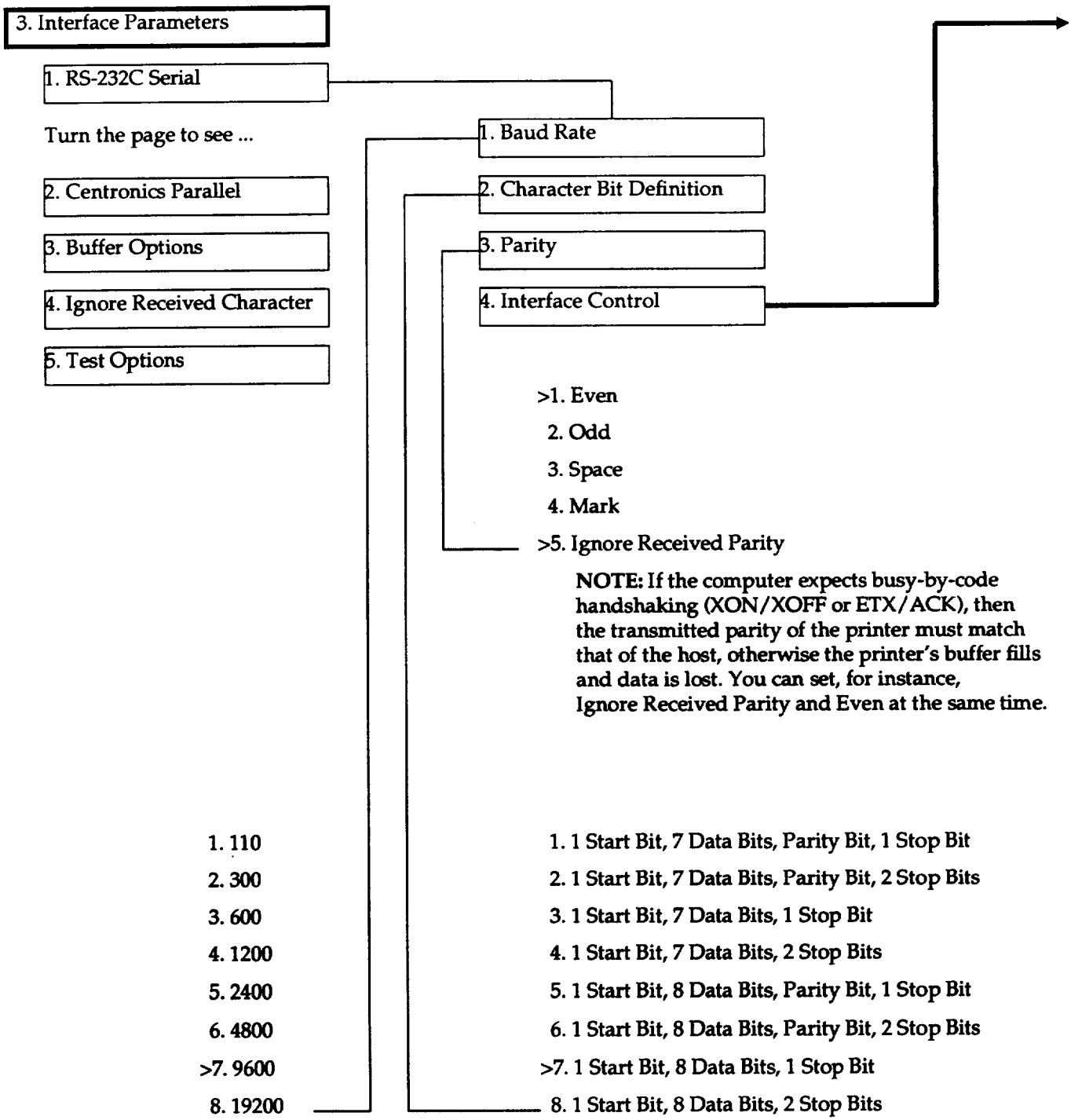
Here are the options on the main menu. Details are on following pages.

1. Exit Printed Menu
2. Format
3. Interface Parameters
4. User Defined Options
5. Emulation Dependent Options
6. Software Options
7. Ribbon Type
8. Status Report
98. *Security Menu* (doesn't print out, but it's there)
99. *Hardware Menu* (doesn't print out, but it's there)

After you press a number for a selection, press ENTER.


2. Format
1. Modify Format
2. Print All Formats Values
3. Assign Paper Path
Select Format to Modify
1. Format #1
2. Format #2
3. Format #3
4. Format #4
5. Active Format
Format Control Menu
1. Print Format
2. Page Format
1. Clear Values
2. Set Values
1. All Horizontal Tabs
2. All Vertical Tabs
3. All Margins
4. Top Print Reference
5. Left Print Reference
6. Horizontal Tabs
7. Vertical Tabs
1. Form Length
2. Top Margin
3. Bottom Margin
4. Left Margin
5. Right Margin
6. Horizontal Tabs
7. Vertical Tabs
8. Top Print Reference
9. Left Print Reference
Select Paper Path for Assignment
1. Single Document Inserter
2. Reserved
3. Reserved
4. Bottom/Front
5. Rear
Enter Format Number to Assign to This Path


1. Print Format
1. Fonts
2. Character Spacing
3. Line Spacing
4. Printing Mode
5. National Character Substitutions
1. Gothic DP
2. Gothic LQ
3. Courier DP
4. Courier LQ
5. Gothic DP Italic
6. Gothic LQ Italic
7. Courier DP Italic
8. Courier LQ Italic
9. WD Gothic DP
10. WD Gothic LQ
11. Micro DP Gothic
12. Micro LQ Gothic
... optional fonts
0. US ASCII
1. German
2. French A
3. French B
4. French Canadian
5. Dutch (Netherlands)
6. Italian
7. U. K.
8. Spanish
9. Danish/Norwegian A
10. Danish/ Norwegian B
11. Danish/Norwegian C
12. Danish/Norwegian D
13. Swedish/Finnish A
14. Swedish/Finnish B
15. Swedish/Finnish C
16. Swedish/Finnish D
17. Swiss
18. Danish/Norwegian E
1. Unidirectional Graphics
2. Unidirectional DP
3. Unidirectional LQ
4. Bold Print
5. Shadow Print
6. Auto <CR> on <LF>
7. Auto <LF> on <CR>
8. Auto <CR> on Vertical Tab or <FF>
9. Proportional Print
10. Underline Mode
11. Reserved
12. Full Width Underline Mode
13. Overline Mode
14. Double Line Feed Mode
15. Perforation Skip
16. Power-Up with Quality Print
17. Reduced Maximum Vertical Slew
18. Multi part Forms Mode (increased impact)
19. Quiet Mode (reduced impact and carriage speed for quieter operation)
20. Auto Tear Off on Form Feed


3. Interface Parameters
1. RS-232C Serial
Turn the page to see ...
2. Centronics Parallel
3. Buffer Options
4. Ignore Received Character
5. Test Options
1. Baud Rate
2. Character Bit Definition
3. Parity
4. Interface Control
>1. Even
2. Odd
3. Space
4. Mark
>5. Ignore Received Parity
NOTE: If the computer expects busy-by-code handshaking (XON/XOFF or ETX/ACK), then the transmitted parity of the printer must match that of the host, otherwise the printer's buffer fills and data is lost. You can set, for instance, Ignore Received Parity and Even at the same time.
1. 110
2. 300
3. 600
4. 1200
5. 2400
6. 4800
>7. 9600
8. 19200
1. 1 Start Bit, 7 Data Bits, Parity Bit, 1 Stop Bit
2. 1 Start Bit, 7 Data Bits, Parity Bit, 2 Stop Bits
3. 1 Start Bit, 7 Data Bits, 1 Stop Bit
4. 1 Start Bit, 7 Data Bits, 2 Stop Bits
5. 1 Start Bit, 8 Data Bits, Parity Bit, 1 Stop Bit
6. 1 Start Bit, 8 Data Bits, Parity Bit, 2 Stop Bits
>7. 1 Start Bit, 8 Data Bits, 1 Stop Bit
8. 1 Start Bit, 8 Data Bits, 2 Stop Bits

4. Interface Control

1. DC1/DC3 Control

>1. Ready/Busy

>2. Online/Offline

>3. Fault

2. CD (DTR) Lead Control

>1. Ready/Busy

>2. Online/Offline

>3. Fault

3. CA (RTS) Lead Control

1. Ready/Busy

2. Online/Offline

3. Fault

4. SCA (SRTS) Lead Control

>1. Ready/Busy

2. Online/Offline

3. Fault

5. Transmission Setup

1. Transmission Disabled

2. CB (CTS) Lead Controls Transmission

3. CC (DSR) Lead Controls Transmission

6. Lead Polarity

1. CA (RTS) Lead Active High

2. CB (CTS) Lead Active High

3. CC (DSR) Lead Active High

4. CD (DTR) Lead Active High

5. SCA (SRTS) Lead Active High

7. ETX/ACK Protocol

1. ACK When Buffer Available

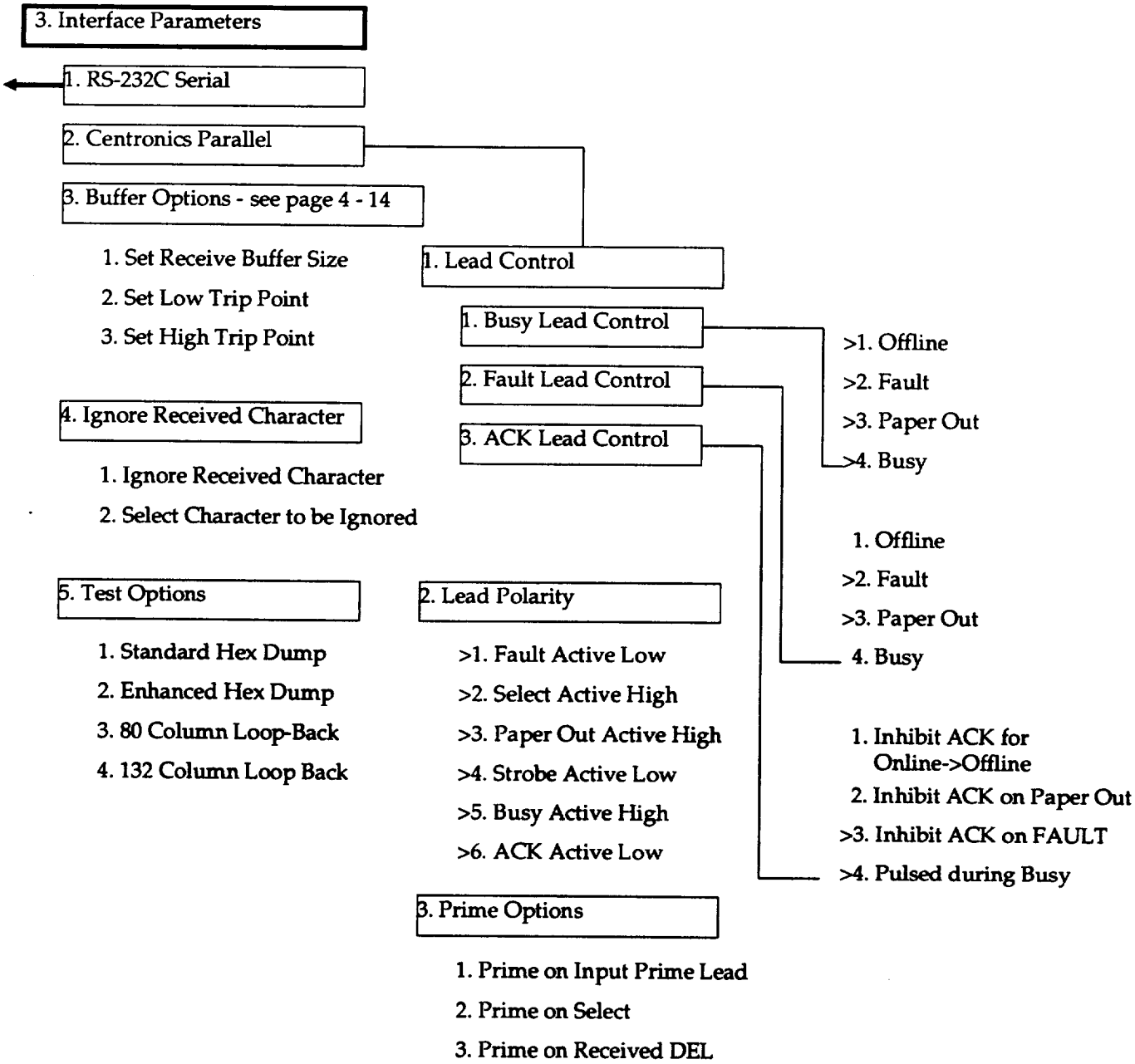
2. ACK After Print

8. Ready Indication

1. Ready Indication Disabled

2. Flash Online LED for Not Ready

NOTE: You can go directly from the main menu to most submenus on these pages. For example, to get the Interface control menu, press 3 . 1 . 4 ENTER from the main menu.



NOTE: You can go directly from the main menu to submenus on this page. For example, to set a prime option, press 3 . 2 . 3 ENTER from the main menu.

4. User Defined Options

1. Auto Wrap

   Assume that the printer gets to the right margin before it gets a line terminator. If Auto Wrap is enabled, then it makes new line(s) and prints remaining data on subsequent lines, else the printer discards data between the right margin and the next line terminator.

2. Slash Zero

3. Reserved

4. Reserved

5. Power Up Online

>6. Power Up to Powered Down State

   This relates to Online/Offline. The printer saves virtually every other parameter through power cycles regardless of the status of this option.

>7. Paper Tearoff Timeout

   If this option is enabled (default) then the printer automatically retracts paper fifteen seconds after you press the tearoff key.

>8. Beeper

>9. Print With Low Paper Fault

>10. Setup Mode Inactivity Timeout

   If you're in the printed menu and haven't touched a key in about fifteen minutes, then the printer automatically goes out of the printed menu. If you don't want this to happen, then disable this option.

11. Reserved

>12. Forms Parameters Change on Paper Path Change

   If this option is enabled (default) then a format is automatically loaded any time you change paper paths.

13. Two Box Option, Auto Load of Continuous Forms

   The default status of this option is disabled. When enabled, the printer automatically switches between front and rear paper paths when it runs out of paper in the current path.

NOTE: These options can be set from the host. See the ANSI chapter in the Programmer's Manual.

5. Emulation Dependent Options

1. Select Emulation

1. ANSI 3.64(00)
2. IBMGP(20)
3. PPXL III(21)
4. FX286e(22)
5. DEC LA210(25)

Numbers in parentheses are parameters for the escape sequence that selects among emulations.

2. User Selectable Emulation Options

1 Compress characters on CPI change to avoid overlapping print (ENB)

2. Reserved

3. Enable 8-bit control functions (80 - 9F hex). Option 9 must be off. (DIS)

4. Respond to control codes while in graphics mode (ENB)

5. Reserved

6. Reserved

7. ANSI - Select/Deselect printer by DC1/DC3 in parallel interface (DIS)

8. Reserved

9. Default to character set 2 (DIS)

10. Enable answerback - ANSI and DEC emulations (DIS)

11. Map italics to high-order characters in Epson (DIS)

12. Abort ANSI escape sequences containing control codes after the CSI. (DIS)

As shipped, if the printer finds a control code imbedded in an otherwise valid ANSI escape sequence, then the printer executes the control code, as well as the affected escape sequence. If option 12 is enabled, then the escape sequence is aborted and the control code is discarded.

13. Reserved

14. Ignore vertical tab control code when no tabs set - applies to ANSI (DIS)

15. Enable CAN code - applies to IBM and Epson (DIS)

16. PPXL-III - discard p1 and p2 of ESC [p1 p2 p3 sequences (DIS)

17. Epson - default to 12-inch form on software reset (DIS)

18. PPXL-III Power up to powered-down state (ENB)

Disable this option if you want the printer to power up according to the PPXL-III Set Initial Condition command.

19. ANSI - Strip eighth bit from received data (DIS)

20 - 32 Reserved

NOTE: These options can be set from the host. See the ANSI chapter in the Programmer's Manual.

6. Software Options

1. Back up to top of oversized characters (DIS)
2. Back up to top of bar codes (DIS)
3. Use staggered dot pattern for low-resolution bar codes (ENB)
4. Print guard bars on applicable bar codes (DIS)
5. SI/SO control codes toggle bar code and oversize characters (DIS)
6 - 8 Reserved
9 - 10 Units of measure for entering values in the printed menu (LCD menu uses inches only.)

9	10	
DIS	DIS	inches (default)
ENB	DIS	decipoints (1/720 inch)

11. Reserved
12. Bottom margin tracks form length (ENB)
13. Paper out fault is automatically cleared when paper is detected (ENB)
14. Load format assigned to the current paper path on power-up (DIS)
15. Reserved
16. Map Danish/Norwegian E substitutions to all character sets. (DIS)

    The only ASCII characters affected by the Danish/Norwegian E (ANSI international substitution set #18) are 155 and 157 decimal. These locations are not normally printable characters. To print characters 155 and 157, you must first enable character set 2 from the emulation options menu, regardless of the status of option 16 on this menu. If option 16 on this menu is enabled, then the Danish/Norwegian substitutions are mapped to character locations 155 and 157 in all international character sets.

17. Receive data in local state (DIS)
18. Reduce carriage speed to 70% for line draw characters and graphics (ENB)
19. Send a busy signal every 20 characters when offline. (DIS)

    Only applies if option 17 is enabled

20. Reserved
21. Strip leading and trailing white space from POSTNET bar codes (DIS)
22. Print POSTNET bar codes unidirectionally (DIS)
23. Disable print head homing during tearoff (DIS)

    Also reduces delay time for the auto tearoff function from 5 seconds to 1 second.

24. Paper moves at slow slew rate during auto tearoff (DIS)
25 - 32. Reserved

NOTE: These options can be set from the host. See the ANSI chapter in the Programmer's Manual.

7. Ribbon Type

Not currently an option

8. Status Report

Prints a status report

98. Security Menu *

1. Menu Lock

Locks out the printed menu until a user-defined combination is entered.

2. Online Key Lock

Locks the printer online until a user-defined combination is entered.

3. Keys Locked when Online

4. Keys Locked when Offline

1. Park/Path
2. Font
3. Quality
4. CPI
5. LPI
6. FF
7. LF
8. Fine Adjust Up
9. Fine Adjust Down
10. Tear Off
11. Reserved
12. Format
13. Lock all keys
14. Unlock all keys

99. Hardware Configuration Menu *

1. Exit

2. Hardware Options

>1. Manual Sheet Feeder (Rear)
>2. Tractors (Rear)
>3. Tractors (Bottom/Front)
4. Paper Shear

3. Flight Time Compensation

See related appendix.

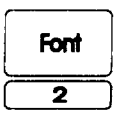
1. Park/Path
>2. Font
>3. Quality
>4. CPI
>5. LPI
6. FF
7. LF
8. Fine Adjust Up
9. Fine Adjust Down
10. Tear Off
11. Reserved
12. Format
13. Lock all keys
14. Unlock all keys

* NOTE: Options 98 and 99 don't show up on the printed main menu list. But you can select these options just as you would any other option; for instance, press 9 8 ENTER at the main menu level to get the security menu.

Get Out of the Printed Menu

The FIRST key takes you to the main menu from any point in the printed menu.

Press 1 and then ENTER to exit the printed menu. The printer asks whether you want to abort or save your menu changes.



Press 1 to abort or 2 to save.

You are now in the LCD menu. To get out of the LCD menu and back online, press First, Enter, and then OnLine.

Press the First key

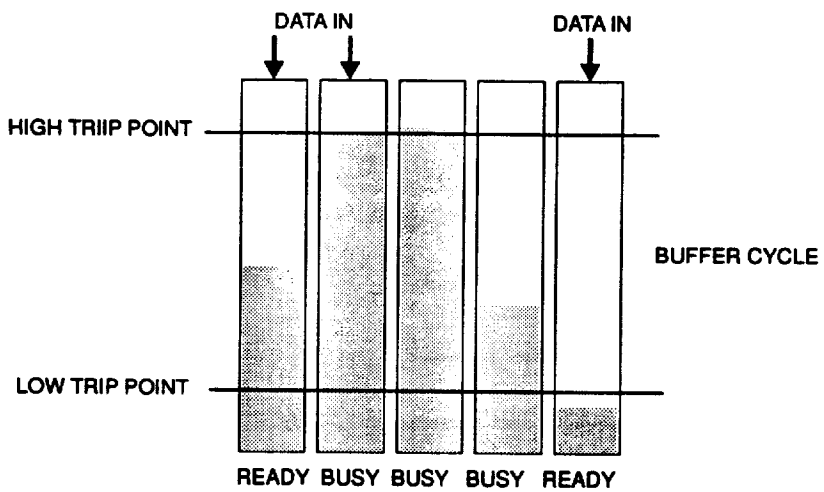
Press the Enter key

Press the Online key

Buffer Options

At the time we ship the printer, and again at ISU, the input data buffer size is 4K, the high trip point is 256 bytes below the top of the buffer, and the low trip point is 256 bytes above the bottom of the buffer. You can change these buffer parameters from the Interface Parameters option on the printed menu, and the printed status sheet shows the current buffer settings. You can set the buffer size from 1K to 64K in 1K increments.

When the buffer fills to the high trip point, the printer sets a BUSY condition at the interface to tell the host to stop sending data. When the printer drains the buffer down to the low trip point, it sets a READY condition at the interface to tell the host it's OK to send more data.



The reason for the band between the high trip point and the top of the buffer is to allow receipt (and thus prevent loss) of data while the host reacts to BUSY. The default works in most cases, but, on some networks, there's significant delay between the time the printer goes BUSY and the data source gets the message. The reason for the band between the bottom of the buffer and the low trip point is to give the printer something to do while the host reacts to the READY signal.

Chapter 5. Control Panel Lockouts

When you see LOCKED on the LCD, it's usually because you're online and pressing one of the keys that are supposed to work offline only, like PROG, FONT or CPI. If you see LOCKED, look at the online light. If it's on, then press the ONLINE key to turn it off.

If you try to go offline and get flashing lights and a prompt to enter a code, then somebody has locked the printer online. You'll need to either get the combination or resort to one of the remedies described in the following chapter to recover. The printed menu can also be locked out in a similar way.

If you're seeing LOCKED when you don't expect it, then somebody may have locked out some of the keys. This printer gives you control over which control panel keys work online and which don't.

Lock the Printer Online

You can set the printer so it won't go offline until a combination of digits is entered. This effectively locks out both the LCD menu and the printed menu, as well as the quick selections like FONT and CPI. You get to the online lock through a secret "door" on the printed menu. This is the Security menu, option 98 on the main menu, which doesn't show up on the printed option list.

You can use a sequence of as many as five digits for a combination, but the biggest number you can use is 65535. To remove a lock, enter a combination of 0. Let's say you want to set 12345 for the online lock. With the printer offline, proceed as follows:

Prog	LCD says Prog: Exit
Up Arrow	LCD says Prog :PrMenu
Enter	Main menu is printed.
9, 8, Enter	Security menu is printed.
2, Enter	Enter Combination of Online Lock.
1,2,3,4,5, Enter	New Combination for Online Lock is 12345
First	Main Menu is Printed
1, ., 2, Enter	Exit and Save
First	LCD says Prog :Exit
Enter	LCD shows format number.

Now if you go online and then try to go back offline, you'll get flashing lights and a prompt to enter the combination. Don't forget to press Enter following the last digit (1,2,3,4,5, Enter).

You can also set the ONLINE lock from the host by sending an escape sequence. Details are in the ANSI chapter in the Programmer's Manual.

If somebody has locked your printer online and you don't know the combination, your best bet is to send down the escape sequence to either set the combination to 0 (which removes the lock), or set a new combination. To be sure you're in ANSI emulation, send the escape sequence to select ANSI before you send the escape sequence to change the lock.

If all else fails, you can remove the lock with an ISU; see "Reset the Printer - ISU", page 8 - 2. An ISU can be a nuisance, though, when there are complex setups stored in the printer and you can't print out a status sheet to use as a reference when you try to set the printer back to the way it was.

Lock the Printed Menu

You can set the printer so that the printed menu won't work until a combination of digits is entered. Setting the combination is very similar to setting the combination for the Online Lock described on the previous pages. As many as 5 digits can be entered (the biggest number you can use is 65535) and you enter 0 to remove the lock. This can be done from the Security menu, (option 98 on the main printed menu) or from the host by sending an ANSI escape sequence. Details are in the ANSI chapter in the Programmer's Manual.

Recovery from a lost combination is the same as for the online lock; your best bet is to send down a 0 combination from the host. If you have to ISU the printer to get your printed menu back, though, at least you can print out a status sheet before you reset everything in the printer.

Lock Various Keys

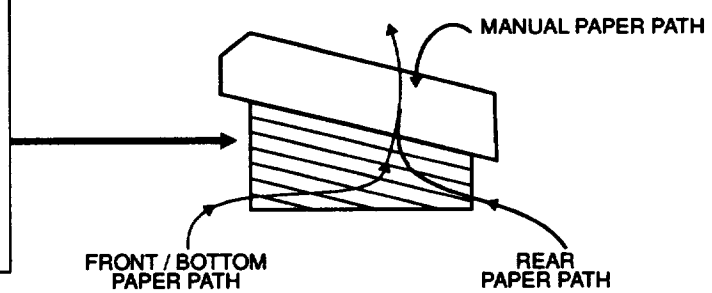
The Security menu lets you say whether you want various control panel keys to work online, offline, neither, or both. The process is self-explanatory once you're in the Security Menu. You can also control this feature from the host. Details are in the ANSI chapter in the Programmer's Manual.

Chapter 6. Formats

Format # 1	Format # 2	Format # 3	Format # 4
print references character set margins tabs font pitch print modes and so forth...	print references character set margins tabs font pitch print modes and so forth...	print references character set margins tabs font pitch print modes and so forth...	print references character set margins tabs font pitch print modes and so forth...

Active Format

print references
character set
margins
tabs
font
pitch
print modes
and so forth...



There are four user-defined formats stored in the printer at all times. Any stored format can be assigned to any paper path. Each paper path has a stored format assigned to it. The same format can be assigned to more than one paper path. Any format can be modified and renamed.

We explain the active format on page 6 - 3.

What is a Format ?

A format is similar to a batch file saved on a personal computer. A batch file is stored, somewhere on media, under a filename. You can change the contents of a batch file, you can rename it, you can run it, and, under certain conditions, your computer will automatically run it.

The stored formats in the printer are files, stored in nonvolatile RAM, that contain printer settings such as form length, margins, fonts, tabs, and just about everything else that affects the appearance of the page. Things you cannot store in a format include the hardware interface settings, the emulation, and the status of software options and emulation options.

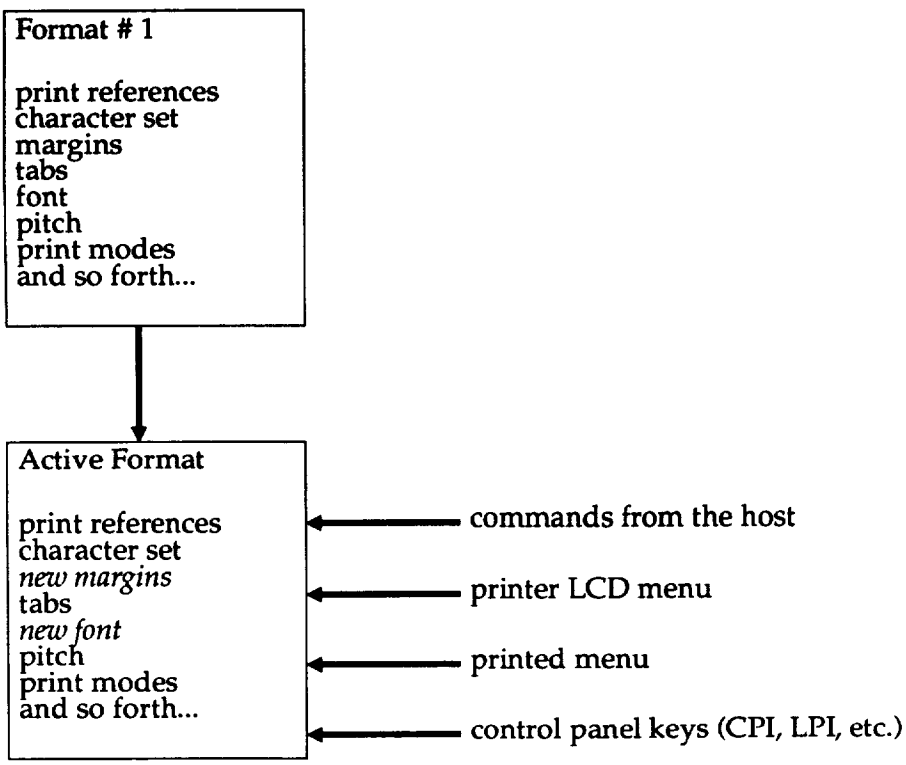
Why Use Formats ?

To the extent you can do so, you should control your printer from the host, either directly from the application or from batch files. It's easier to edit a printer control string than it is to change a format. If you can set the printer the way you want it from the host, then don't use formats.

Formats are used for various reasons. Sometimes you don't have access to the application software, or even to the host. In those instances, the formats are a big advantage if you often change print parameters along with paper paths to print on different kinds of forms.

The Active Format

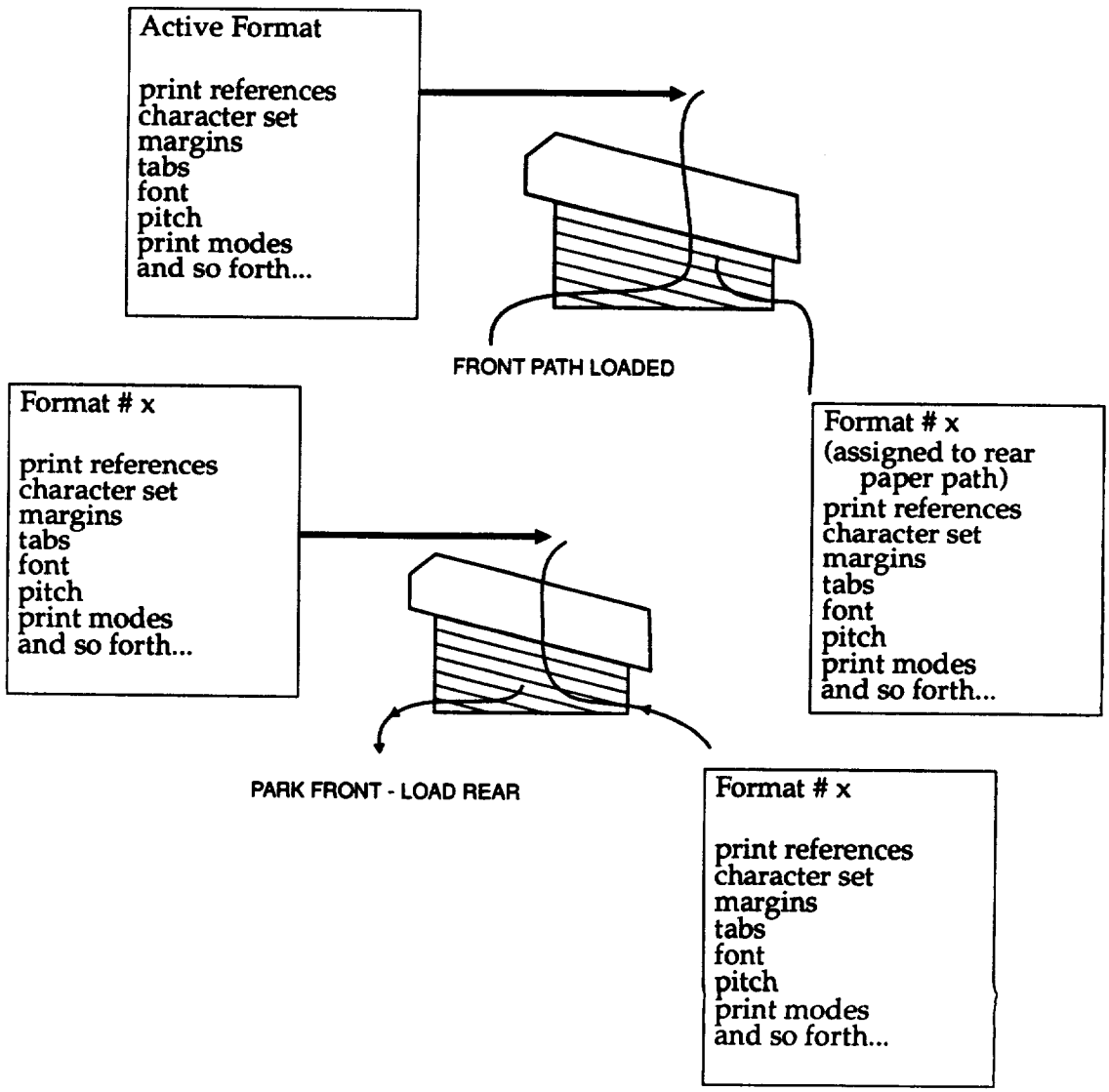
In addition to the four stored formats, we'll talk about the active format. Quite simply, the active format is what the printer is set to do right now. Like any programmable device, the printer does what it was last told to do. If you've just called up a stored format, then the printer does whatever is in the stored format, and the active format is a copy of the stored format. If something later tells the printer to do something differently, then the active format changes.



Formats Auto-execute on Paper Path Change

When we ship the printer, it's strapped so that when you change paper paths, the printer calls up the format assigned to the new paper path. Any settings previously in the active format are over-written; if they're not saved to a stored format, then they're lost.

If you don't want the printer to automatically call up a format on paper path change, then go to `User Defined Options` in the printed menu and disable `Forms Parameters Change on Paper Path Change` .



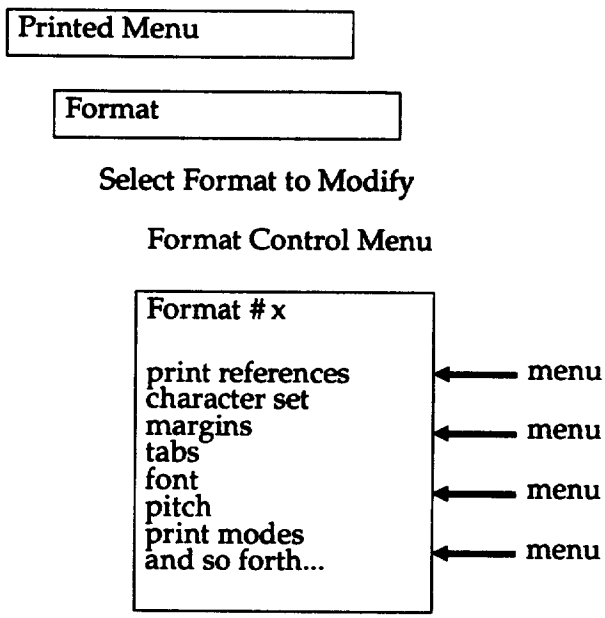
See What's in the Formats

You'll need to print two pieces of paper to see the whole story on the formats.

1. Go to the Utility option on the LCD menu.
2. Do a PR Format. This tells you what's in each of the four stored formats.
3. Do a Prnt Stat. This tells you what's in the active format and which stored format is assigned to which paper path.

Change a Format - Printed Menu

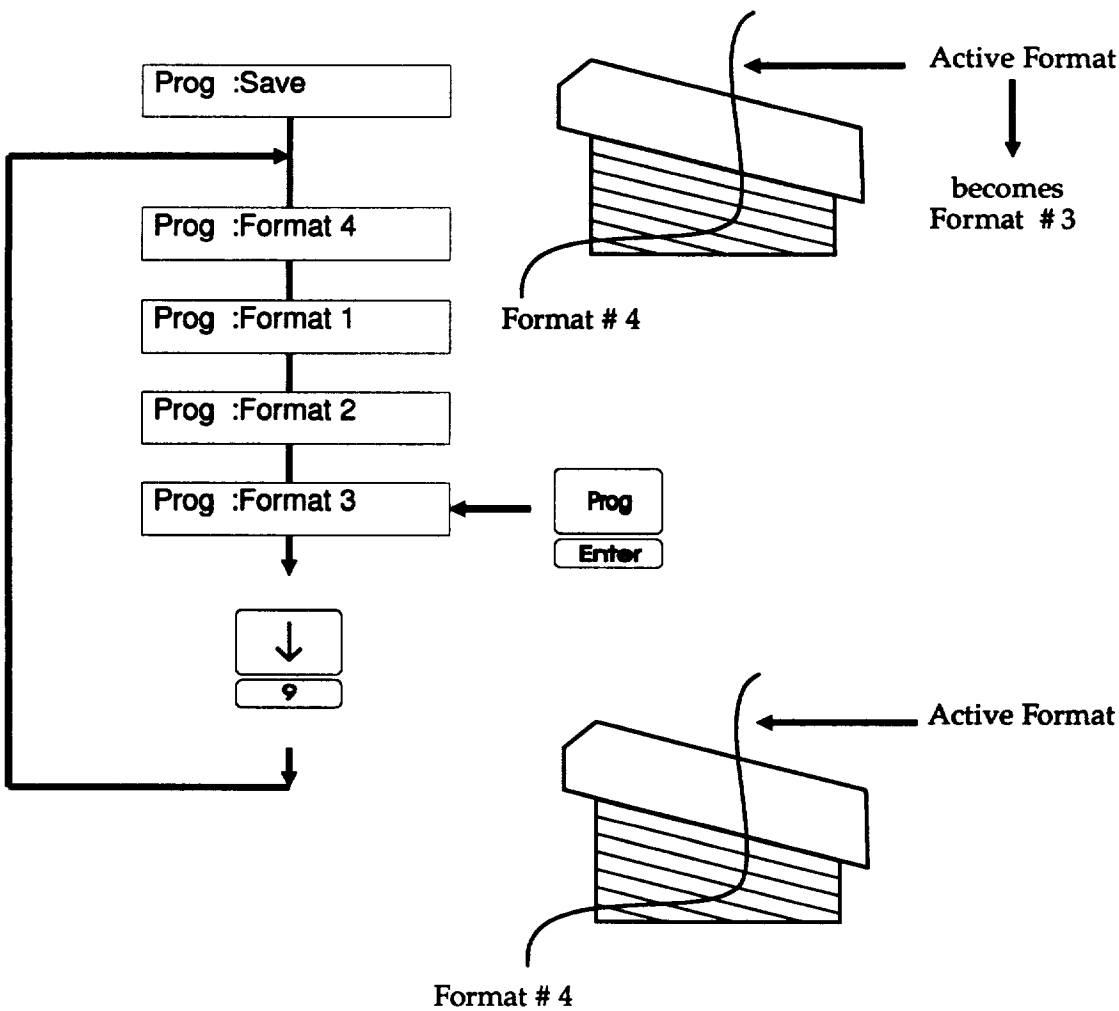
The most straightforward way to work on a format is from the printed menu. You can work directly on any of the four stored formats without bothering the active format, and you can make format-to-paper-path assignments directly. See Chapter 4.



Save a Format From the Control Panel

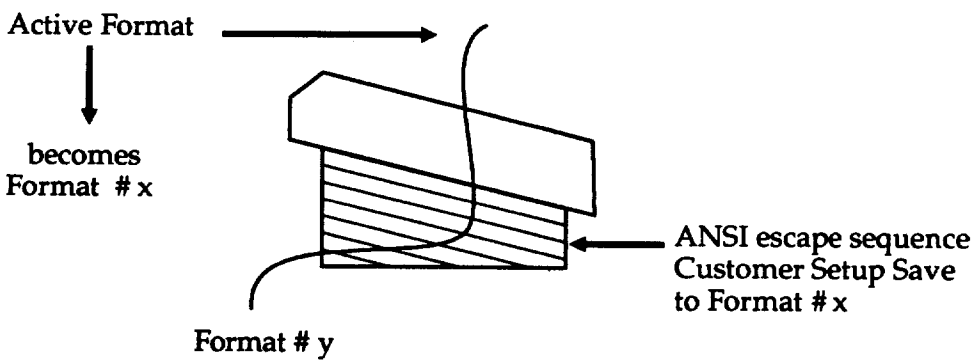
You can save the active format to any one of the stored formats with the Save option on the LCD menu. The format number that pops up first when you save is the format presently assigned to the current paper path.

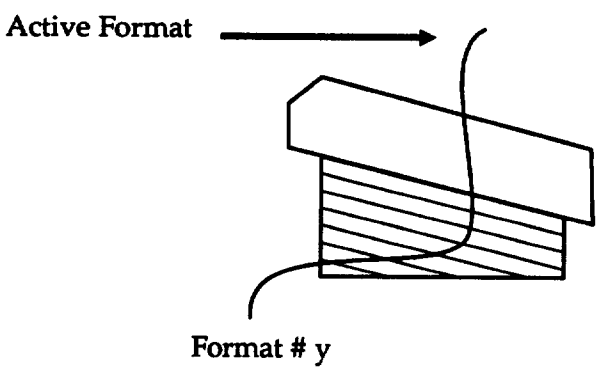
Use the FORMER or FIRST key to bail out of the menu if you decide not to save.



Save a Format From the Host

You can save the active format to any one of the stored formats from the host with an ANSI escape sequence. ANSI calls this a CSS, which stands for customer setup save. You have to be in ANSI emulation to do this, but you can switch back and forth between emulations with escape sequences. Details are in the ANSI chapter in the Programmer's Manual.

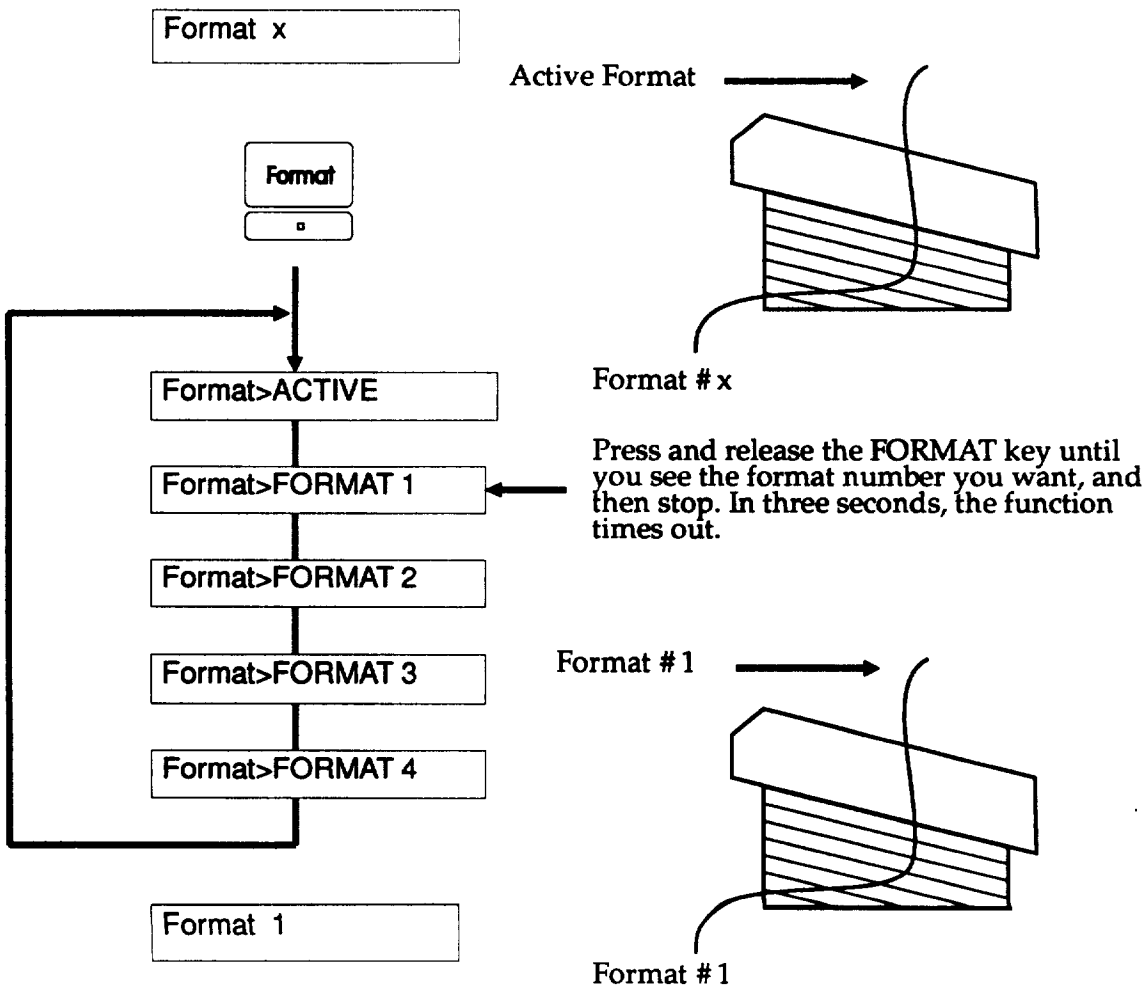




Select a Format - Format Key

You can call up a format with the FORMAT key on the control panel. With the printer offline, press and release the FORMAT key to cycle through the formats: ACTIVE, 1, 2, 3, 4. When you get the format you want, stop and wait about three seconds for the function to time out. This recalls the format you picked and assigns it to the current paper path. The active format is overwritten when you recall a stored format.

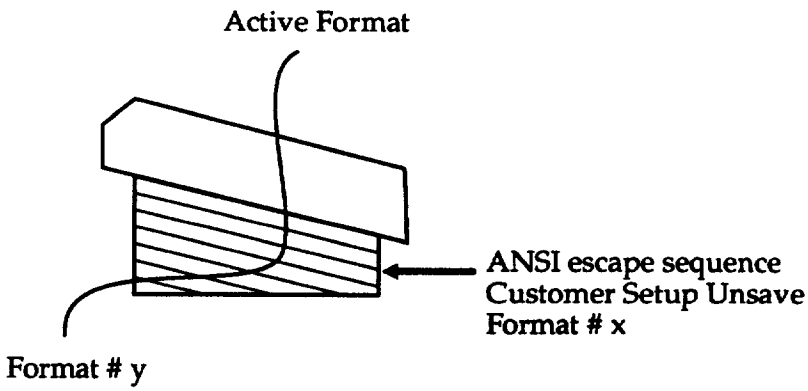
If you press the FORMAT key and decide you don't want to select a format, then press and release the key until you see ACTIVE again.

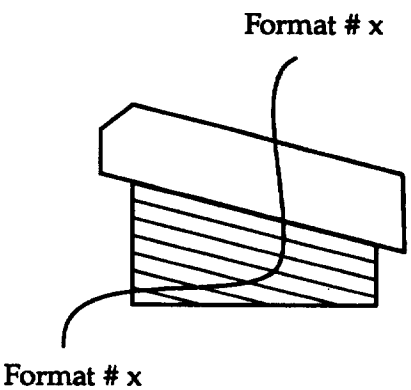


Select a Format From the Host

You can call up a format from the host with an ANSI escape sequence. ANSI calls this a CSU, which stands for customer setup unsave. (This term is misleading in that nothing is deleted or lost as a consequence of a CSU.) You have to be in ANSI emulation to do this, but you can switch back and forth between emulations with escape sequences. Details are in the ANSI chapter in the Programmer's Manual.

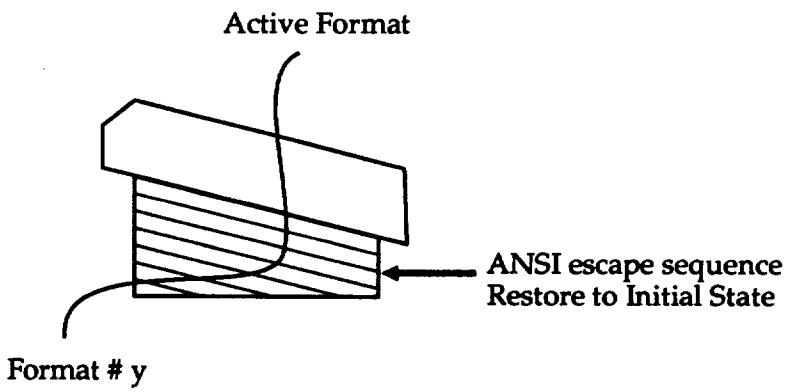
Whatever format you unsave is assigned to the current paper path, replacing any format previously assigned to that path.

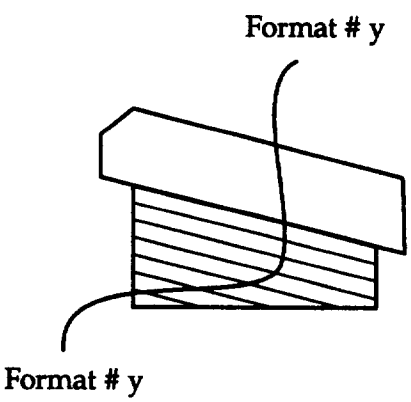




Call the Assigned Format From the Host

You can call up the format presently assigned to the current paper path with an ANSI escape sequence. ANSI calls this an RIS, which stands for restore to initial state. You have to be in ANSI emulation to do this, but you can switch back and forth between emulations with escape sequences. Details are in the ANSI chapter in the Programmer's Manual.





Power Up to the Currently Assigned Format

At the time we ship the printer, it powers up to the settings that were in the active format when power was turned off.

You can set the printer so it powers up to the format assigned to the current paper path. Go to the printed menu and enable Software Option 14. See chapter 4.

Rename a Format

You can assign an alphanumeric name of up to 16 characters to each of the four stored formats, and also to the active format. You can do this only from the host.

```
CHECKS
```

The stored format names are saved in nonvolatile RAM until changed by the user or reset by ISU. A user-defined name for the active format will, on the other hand, be lost when a stored format is called up.

Along these same lines, you can download a one-time LCD message that will be overwritten by the next action that would otherwise update the display.

```
CHECKS DONE
```

You have to be in ANSI emulation to download format names and messages, but you can switch back and forth between emulations using escape sequences. Details are in the ANSI chapter of the Programmer's Manual.

Margins for Menu Listings

There is one place where effects of the stored formats will always show up. When you're in the printed menu, you'll notice that the option lists are printed using margins that may be different from the current margins. The menus are printed according to the horizontal and vertical margins in the stored format assigned to the current paper path.

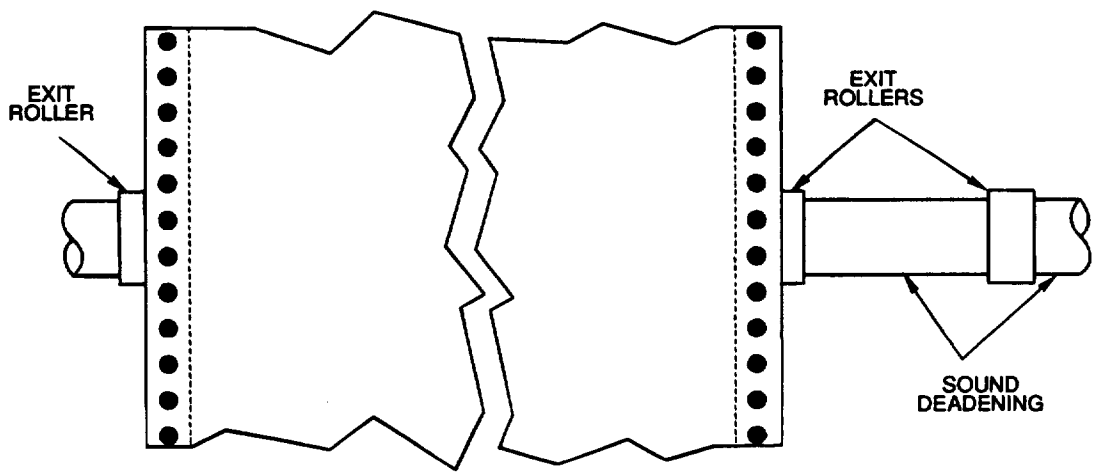
If your margins are too tight to read your printed menu in the current paper path, then exit the printed menu; press FIRST, then 1.1 to abort. Now exit the LCD Menu by pressing FIRST, then ENTER. The easiest thing to do is select a paper path with wider margins to print your menu. If you're only using one paper path, then note the format number shown on the LCD; this is the format assigned to the current paper path. Use the FORMAT key to select a different format while you print your menu. Remember to use the FORMAT key to reassign the old format to the current paper path when you're finished.

Chapter 7. Line Up the Job on the Page

If a job doesn't line up vertically, then you'd normally turn a paper advance knob a click or two. On this printer, the up-arrow and down-arrow keys work like a paper advance knob. If you're adjusting top-of-form this way every time you load paper for a particular job, then you can store that offset as a top print reference.

CAUTION

If a job doesn't line up horizontally, then you'd normally just move the tractors. You can't adjust horizontal print position by moving the tractors on this printer, because the exit rollers are very narrow. If the edges of the paper don't engage the exit rollers, then paper won't feed properly. You'll see this as skewed lines or paper jams.



If you need to adjust the horizontal position of print on the paper, then use a left print reference or a left margin.

The Arrow Keys

If the vertical position of a line of text isn't exactly where you want it on the paper, then you can move the form up or down in 1/72-inch increments with the up-arrow and down-arrow keys. You can hold a key down to move paper faster. You can move paper with the arrow keys even when the printer is online.

Positioning paper with the arrow keys is the same as turning a paper advance knob; it's what we call an "unregistered move." The printer doesn't keep a record of how far you moved the paper, and any adjustment you make this way disappears when you reload paper. Next time you load paper, the printer advances paper so that the top edge of the physical form lines up with the top wire of the print head. We call the distance that paper moves during a load operation the "load-length distance."

What is a Print Reference?

The top print reference is something like a top margin, and the left print reference is something like a left margin. However, there are critical differences between margins and print references that you need to understand before you decide whether to set one or the other.

Set a Top Print Reference

Let's say you have to advance a particular form the same number of clicks with the up-arrow key every time you load that form. You can get out of this by saving an offset to the load length distance so the form will automatically be positioned where you want it when it's loaded. This is a Page Format parameter that we call "Top Print Reference."

You can set Top Print Reference from the LCD menu, or from the printed menu. It's more straightforward to set it from the printed menu. Before you set this parameter, find out which format is assigned to the paper path you're going to use. Either load the paper path of interest and note the format number on the LCD, or print a Status Sheet from the Utility option on the LCD menu. This report tells you which format is assigned to each of the three paper paths.

You can put different top print references in each of the four stored formats, but there are two aspects of setting the top print reference that aren't obvious:

1. You can't modify the top print reference in the active format. If you don't save a top print reference to a stored format, then you'll never see it.

2. Even after you've saved a top print reference to a stored format, it won't take effect until the next time you load the paper path to which that format is assigned. If you save a top print reference to the stored format assigned to the current paper path, then you must park and reload paper in order for the top print reference to take effect.

There must always be blank space at the bottom of your form that is equal to or greater than the top print reference; otherwise, you'll print across the perforation and onto the next form.

If you set a non-zero value for the top print reference, then you may need to change the tearoff distance in the affected format.

Set the Tearoff Distance

1. If you're working on the format assigned to the current paper path, then park and reload the current paper path so the top print reference will take effect. Otherwise, change to the paper path you want to fix.

2. With paper at top-of-form, press the TEAROFF key. The printer advances paper according to the current tearoff distance.

3. Use the up-arrow and down-arrow keys to set the tearoff distance to whatever you want.

4. Press Enter

5. Press the TEAROFF Key again, or wait for the tearoff function to time out.

The new tearoff distance is now stored in the format assigned to the current paper path.

Set a Left Print Reference

You can set a left print reference either from the Print Reference option on the LCD menu, or from the printed menu. The menus expect you to enter values in inches and hundredths, (unless you've changed the units of measure to decipoints via Software Options on the printed menu).

In contrast to the top print reference, you can modify the left print reference in the active format. You can save different left print references in each of the four stored formats.

Be careful not to set so much left print reference that you print off the right edge of the form, or you could damage a print head.

Local Margins are Tricky

In an ideal world, the only margin you'd want to set at your printer would be the right margin. It's a good idea to set a right margin equal to your form width. If the host gets confused and sends a long line of data, then you'd like not to print off the right-hand edge of your paper, particularly with this printer.

All of the emulations have control sequences to set both horizontal and vertical margins, but very few printer drivers use them. Typically, an application assumes that no margins are set at the printer and sends down spaces and line feeds to effect whatever horizontal and vertical margins it wants. Some applications clear all printer margins before sending any printable data.

If you need a margin and you can set it from the application, then by all means set it from the application. If you set either horizontal or vertical margins locally to position a job on the page or to skip over perforations, then your solution may work with one application and not with the next.

Use Top Print Reference or Top Margin?

Very few applications send vertical tabs to the printer, but if yours does and you set a top margin locally, then the vertical tabs may not be positioned correctly relative to the first printed line on the form. This depends on how the application sets tabs, and whether or not tabs were set before the top margin was set.

A better argument against setting a top margin at the printer is that many applications don't send form feeds to move from one form to the next, but instead send enough line feeds to get from the last printed line on one form to the first printed line on the next.

If you set a top margin at the printer and your application is sending form feeds to move from one form to the next, then the top margin will work like you expect. If your application is sending line feeds to move from one form to the next, however, then the top margin will accumulate. The first printed line on each

successive form will move farther down the page by the amount of the top margin.

To summarize, a top margin adds blank space beyond what is sent by the host. A top print reference, on the other hand, adds no blank space but simply moves printing farther down on the form.

Use Left Print Reference or Left Margin?

Setting a non-zero value for the Left Print Reference moves printing to the right on the paper.

When deciding whether to set a left margin or a left print reference, note that if you set a left margin at the printer and your application sends horizontal tabs, then the position of the horizontal tabs relative to the leftmost character on the paper may no longer be correct. This depends on how the application sets tabs, and whether horizontal tabs were set before or after the left margin was set.

To summarize, if you want to limit the number of characters that can be placed on a line, then use left and right margins. If you just want to change the horizontal position of printing on the paper, then use the left print reference.

Chapter 8. Power Up and Reset

When you turn off a typical low-end desktop printer, it forgets how it was set, and it powers up to a set of defaults that may or may not be what you want. In sharpest contrast, this printer stores virtually every user-adjustable parameter, from print quality to bar code expansions, in nonvolatile RAM. You may find this awkward at first if you're used to cycling power on a printer to restore a set of defaults. But the more exacting your task, the more you'll appreciate the fact that this printer remembers.

The State of the Printer on Power-Up

When your printer left the factory, it was strapped so that every time you turn it on, it has the same settings as when you last turned it off. If the last thing you printed before you turned power off was at 12 cpi, 4 lpi, then when you turn the printer back on, it prints at 12 cpi, 4 lpi until something tells it otherwise.

As an alternative, if you want the printer to power up to the settings in the format assigned to the current paper path, then go to the printed menu and set software option 14 = ENB.

Since this printer stores virtually every user-adjustable parameter in nonvolatile RAM, the concept of a default parameter is only minimally applicable. But you can reset the printer to the way it was when it left the factory by doing a procedure that we call an "ISU."

Reset the Printer - ISU

We ship the printer with Centronics parallel interface and ANSI emulation selected. We set other parameters to what we think you might want for a starting point. We call these factory settings the Initial SetUp, and we call the procedure that restores these settings an "ISU." If you ISU the printer, then you'll replace nearly every adjustable parameter stored in nonvolatile RAM with default values from ROM.

An ISU is somewhat analogous to rebooting a computer. If your printer seems to be locked up for some mysterious reason and recycling power doesn't cure it, then you can try an ISU.

An ISU can cost you some work if you have complex setups stored in the printer. The stored formats and format-to-paper-path assignments are reset to factory settings along with nearly everything else. Before you do an ISU, print a status sheet and also a format sheet if you can. To perform an ISU:

1. With paper loaded in the current path, turn the printer power off.

2. Press and hold the Park/Path and Font keys (1 and 2).

3. While holding these two keys, turn the printer power on. The printer turns on with the Fault light flashing.

4. Wait for the printer to beep.

5. Release the Park/Path and Font keys. DO NOT touch the up-arrow or down-arrow keys at this time.

6. Press the Clear key to acknowledge the ISU. The fault light stops flashing and, in the absence of any printer faults, goes out.

After an ISU

1. If you're using a paper shear, or anything else that you have to enable from the hardware options menu (item 99 on the main printed menu), then you'll need to restore those enables following an ISU.

2. If you're using serial interface, then you'll need to reselect that interface and restore any serial parameters that need to be different from the defaults. You'll also need to restore the emulation if you're using anything but ANSI.

3. If you've changed any straps (software options or emulation-dependent options), then you'll need to restore the status of those straps.

The most obvious aspect of the printer configuration that's not reset by an ISU is the paper path selection; the paper path that was active when the printer was turned off remains current following an ISU. The other user parameters that are not reset are the flight-time compensation adjustment (see "Adjust the Flight-Time Compensation", page 10 - 11) and the load length adjustment (see Appendix E).

Restore Emulation-dependent Defaults

If you really need to make the printer look like, say, an IBM-GP that was just powered up, then there's a trick you can use to do this. Send the escape sequence to select IBM-GP emulation with a full reset. This gets you 10 cpi draft at 6 lpi, 11-inch form length, and all of the other -GP default settings. This works for any emulation, each of which has it's own particular set of defaults. The escape sequence to change emulations is in the ANSI chapter of the programmer's manual.

PPXL-III Set Initial Condition Command

On early low-end desktop printers, such user control of power-up defaults as was provided was effected via DIP switches, which were read at power-up. The DIP switches were a nuisance to change, but were easy to understand. As the genre evolved, adjustment of the power-up defaults moved to the control panel, and, eventually, downline. The syntax of the PPXL-III Set Initial Condition (SIC) command is reminiscent of DIP switches: each bit of a pertinent command parameter represents a printer feature switch.

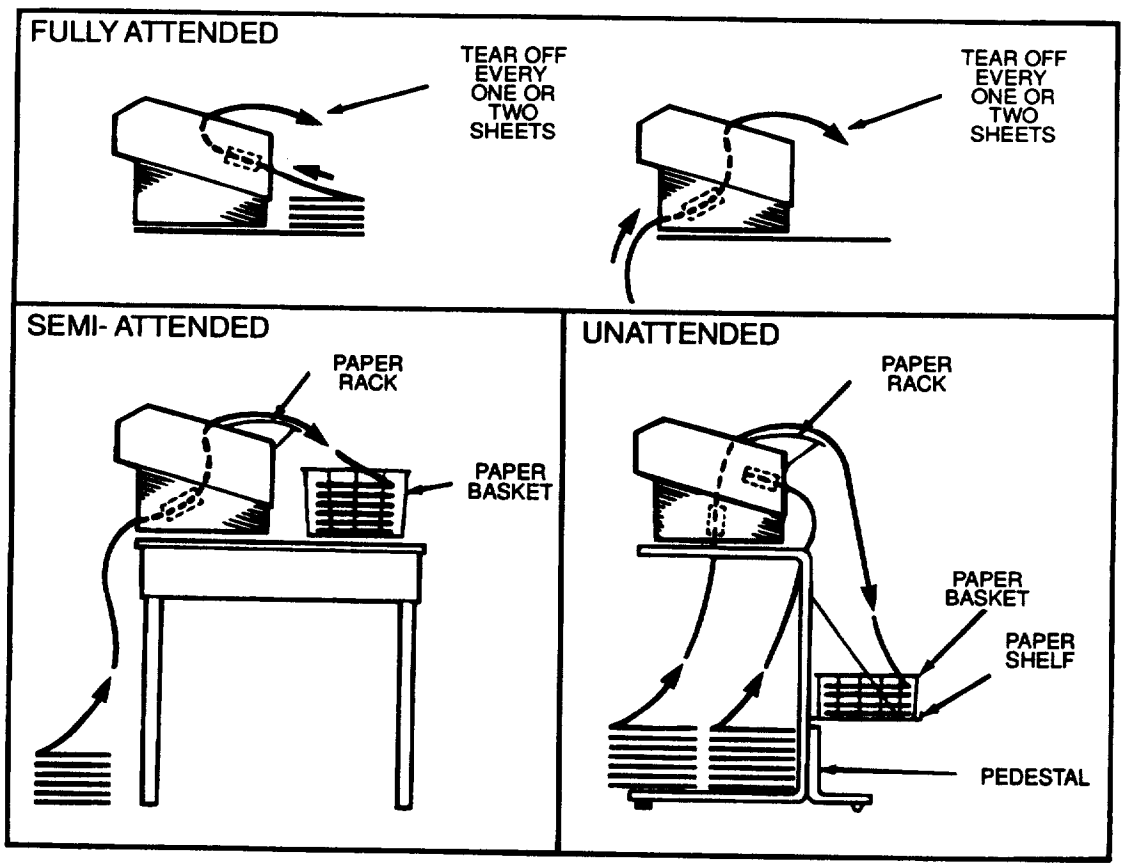
If you have the ability to adjust something downline, then why not just send what you want when you want it? The obvious justification for interpreting the SIC command is that there are several Proprinter features that aren't accessible downline by other IBM control sequences: notably, slashed zero and auto CR on verticle move. We do, therefore, always respect SIC for the current session.

We don't, however, power up according to SIC unless you tell us to. In order to be consistent across emulations, when we ship this printer, it powers up to the last powered-down state. If you later enable software option 14, then the printer powers up according to the format assigned to the current paper path. If, for some obscure reason, you want the printer to power up according to the Proprinter SIC command, then disable emulation option 18 (Power up to powered-down state).

Chapter 9. Paper Handling Features and Techniques

Use the bottom paper path for thick, hard-to-feed forms. Save the rear path for forms that are easiest to feed.

The part numbers for the pedestal, rack, and basket shown in the pictures below are in "Options, Supplies and Parts", Appendix C.



Paper Handling Configurations

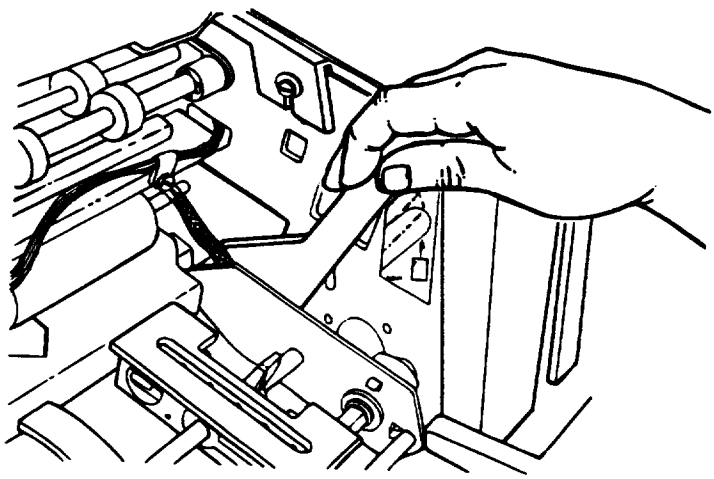
Adjust Paper Tension

We ship the printer with the paper tension on its middle setting. This works for most continuous forms. You might need to adjust tension for:

- multipart forms
- heavy paper or card stock
- the manual paper path

When you adjust paper tension, you're changing the tension between the main friction roller and the nip roller assembly. This adjustment affects the rear and manual paper paths, but not the front path.

If paper tension is too low, then you'll get inconsistent line feeds. If it's too high, then you'll build up distortion in the sprocket feed holes and eventually tear them. Paper tension and print gap settings can interact. Experiment to find combinations that work best for you.



Set the Paper Tension Lever

Check the chart. The chart shows starting points for the paper tension adjustment. Higher numbers mean higher tension; moving the lever toward the back of the printer increases tension.

Open the rear door.

Pull the paper tension adjust lever away from the side frame... to disengage the lever pin from the hole in the side frame

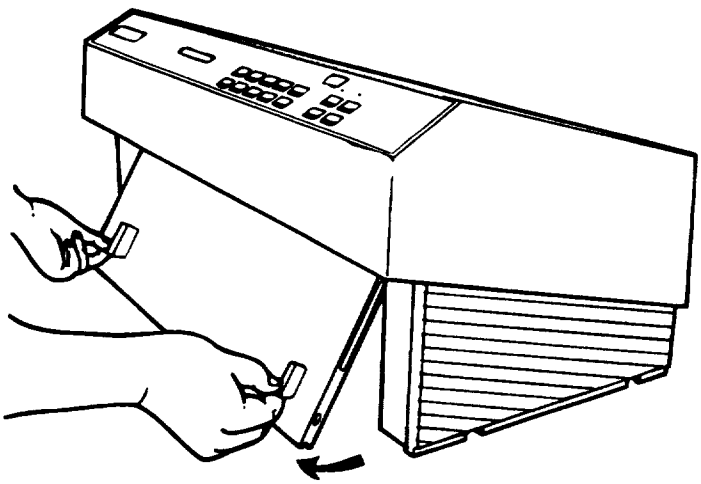
Move the lever to the new position. Make sure the lever pin is in one of the four holes that serve as detents.

Lever Position	Type of Paper
1	Use as needed.
2	Continous feed: 15 - 24 lb. Manual feed: light weight cut sheets
3	Manual feed: envelopes, heavy cut sheets

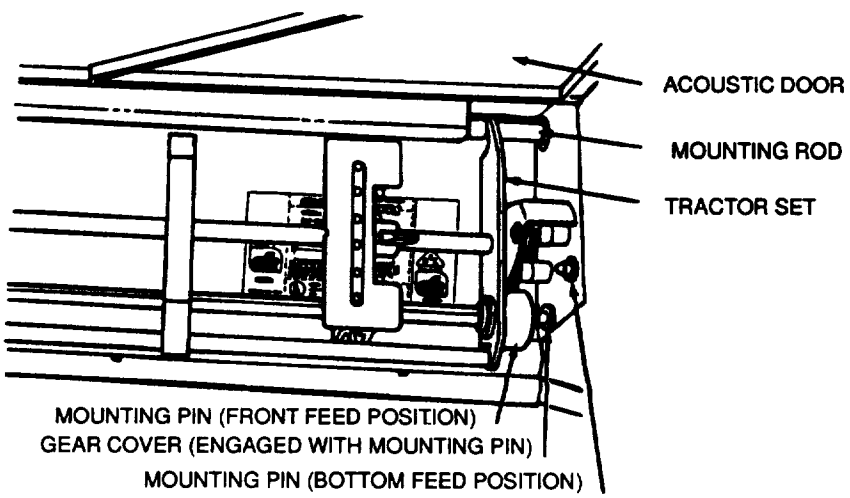
Install the Front Tractors

We ship the printer with one set of tractors installed in the rear, and a second set boxed separately for installation in the bottom/front paper path. Here's how to install the front tractors.

At the front of the printer, pull open the acoustic door and slide it upward into the storage position.

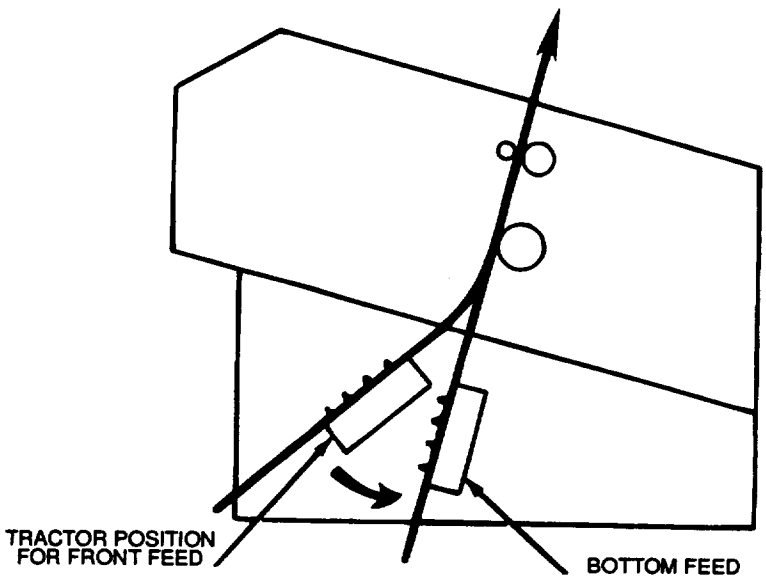


Hook the notch on each side of the tractor set over the mounting rod in the front of the printer.



Press the tractor set down and into the printer until it snaps into place in the front feed position, or push it farther in the printer until it snaps into the bottom feed position.

The tractor set is snapped in place when the hole in the gear cover on the tractor set engages with one of the mounting pins in the printer.



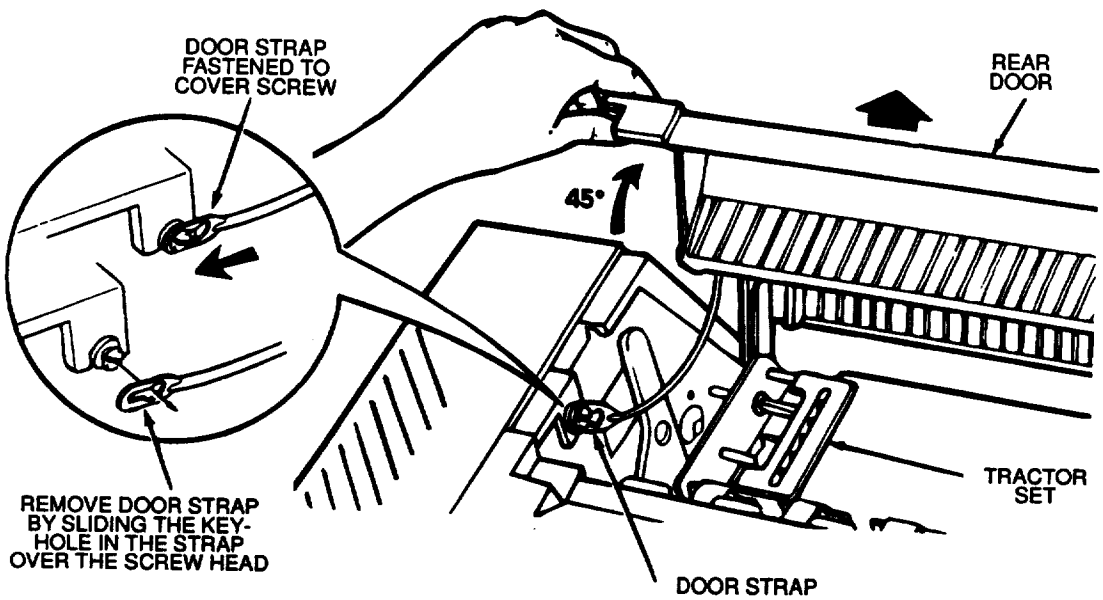
Tractor Position for Front and Bottom Feed

Remove the Rear Tractors

The tractors installed in the rear are interchangeable with the tractors for the bottom/front paper path. In case you ever need to move tractors from the rear to the front, here's how to get the rear tractors out.

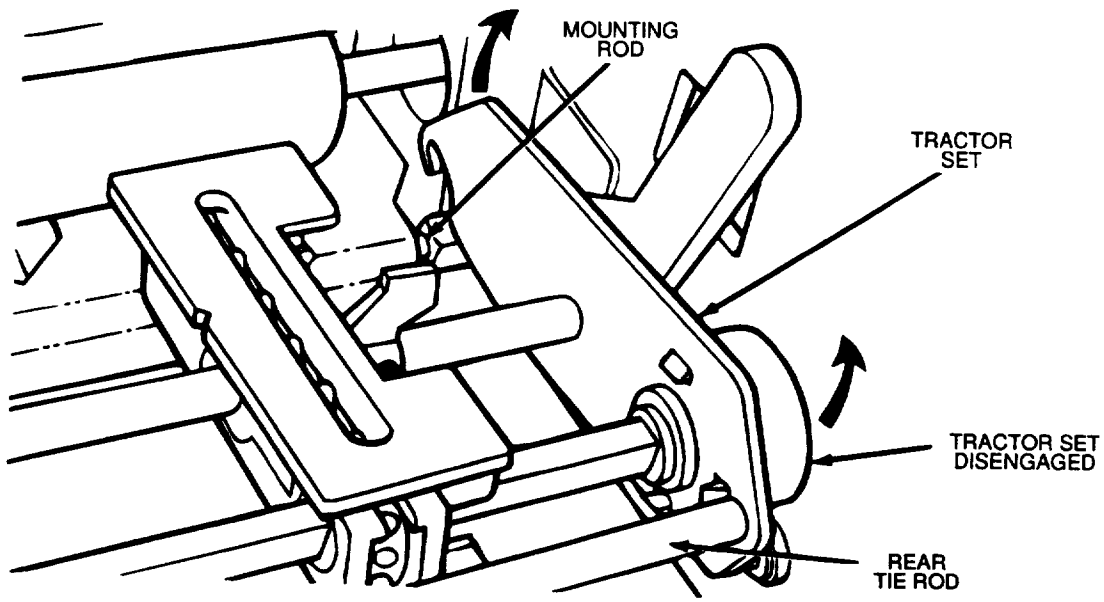
Remove the retaining straps on the rear door. The nylon straps are keyed to slide over the screws.

Remove the rear door. Open it part way and then lift it up.



Remove the Rear Door

Reach inside the printer and grasp the tractor set by the rear tie rod.



Remove the Tractor Set from the Rear Path

Lift up on the rear tie rod until the tractor set snaps free of the end supports.

Move the tractor set forward to unhook it from the mounting rod.

Reinstall the rear door.

Change Paper Paths From the Control Panel

Tear off any forms in the current path.

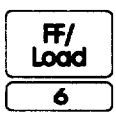
The park function gives you some leeway in this. The printer will retract a length of paper up to one and one-half times the current form length, or 6 inches, whichever is greater. If you park a printed form, though, you have to remember to advance paper to the first clean form when you reload that paper path.

The printer parks the form in the current paper path.

Press and Release Park/Path until the LCD shows you the paper path you want.

Wait three seconds for the function to time out. LCD says

`Fault: Paper Out`



If there's paper in the path you picked, then the printer loads a form.

If the LCD still says Fault: Paper Out..

If a form loaded, then press the Clear key. We ship the printer strapped so that paper-out fault is automatically cleared when you load a form. But if software option 13 is disabled, then you have to clear the fault from the control panel.

Change Paper Paths From the Host

You can select the front or rear path from the host. You have to be in ANSI emulation to do this, but you can switch back and forth between emulations with escape sequences. Details are in the ANSI chapter in the Programmer's Manual.

If you're not using the paper shear option, then you must tear off forms in the current path before you make a remote paper path selection. To insure that this happens:

- Send a form feed before you send a command to change paper paths.
- Next, put a pause in your program, along with a prompt to tear off paper, before you send a command to change paper paths.

If you change paper paths from the host, then the printer attempts to park paper in the current path. The printer retracts up to 6 inches or one-half the current form length, whichever is greater, of a partially advanced form. This contrasts to the one and one-half form lengths it will retract during a local park.

If more paper than this remains to be torn off, then the printer cancels the paper park and moves the paper back to where it was before the park was attempted. No more data is printed, and both the control panel and the interface indicate fault conditions.

Recover from a Remote Path Change Failure

If the printer can't change paper paths because there's too much paper in the previous path to park, then the LCD says Chk. Paper. Here's how to recover:

Press the Clear key.

Tear off the form(s) in the current path.

Press the Park/Path key. The printer loads the new path and prints any data routed to the new path.

Auto Load on Paper Out

You can set the printer so that, when you run out of paper in either the front/bottom or rear paths, the printer automatically loads the other paper path. You need two sets of tractors to do this.

This feature is controlled by `Two Box Option, Auto-load of Continuous forms` under `User Defined Options` on the printed menu. We ship the printer with this option disabled.

Multipart Forms

When printing multipart forms:

- Use the bottom paper path for very thick or heavy forms. If you're printing on different weight forms, reserve the rear path for the easiest form to feed.
- If you're using the rear path for multipart forms, then check paper tension; see "Adjust Paper Tension", page 9 - 2. You'd like to pull paper across the striker bar as tight as you can

without elongating the sprocket-feed holes in the forms. This adjustment doesn't affect the front/bottom paths.

- Select either the WD (wide) Gothic DP, or the WD Gothic LQ font. The WD fonts make better carbon copies. You can select fonts directly with the font key, from the LCD menu, or from the printed menu.
- Select MultiPart to reduce carriage speed and increase print impact. This is in the Special Modes LCD submenu. On the printed menu, go through the Format menu to the Select Printing Mode submenu.
- When we ship the printer, it's set to slew paper at 15 inches per second. If you're tearing sprocket feed holes, or otherwise pulling forms apart during form feeds, then you can reduce the paper slew speed to 5 inches per second. On the printed menu, go through the Format menu to the Printing Mode submenu. Or, you can select this option from the host via the STRAPS AND OPTIONS command. See the ANSI chapter in the Programmer's Manual for details.

The Manual Paper Path

You can print cut sheets and envelopes one at a time using the manual paper path.

When printing on cut sheets, allow at least a 1/6-inch margin at the top and a 1/2-inch margin at the bottom of the page. You can't print much closer to the bottom of the page than 1/2 inch due to the position of the paper-out switch. At 6 lines per inch you'll get a paper-out indication after the 64th line on a cut sheet.

For this reason, the manual paper path won't work if your application sends line feeds to move from one form to the next. At 6 lines per inch, two lines from page 1 will show up on page 2, and so forth.

Furthermore, if you print on the very top of a cut sheet, then print quality on the first line can be inconsistent.

Set the printer off-line.

Park the continuous forms that are loaded now.

Press and release the Park/Path key until Path Manual shows up on the LCD. This selects the manual paper path.

`Path Manual`

Set the paper tension adjustment to 2.

See "Adjust Paper Tension", page 9 - 2.

Adjust the paper guides for width and position.

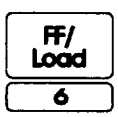
If the electronics are set for 0 left margin and 0 left print reference, then you get a 1/2-inch left margin when you line up the arrow on the left paper guide with the arrow on the top door.

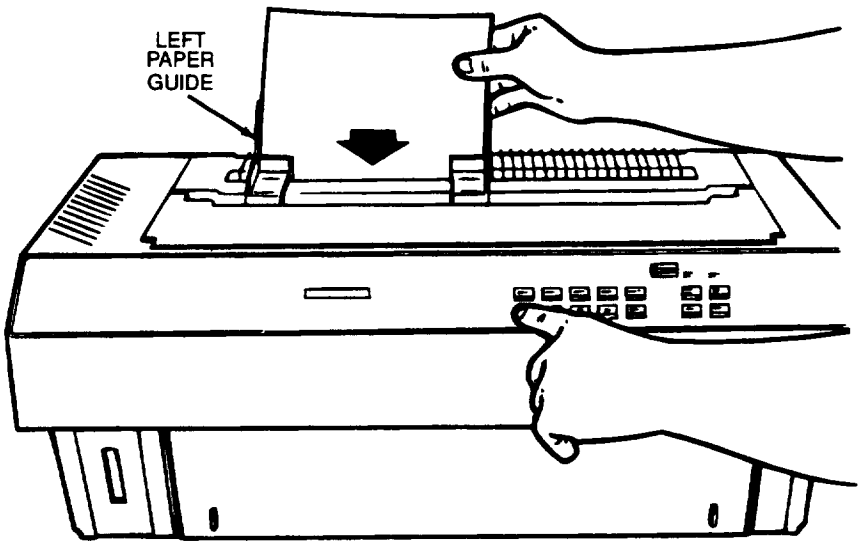
Insert a sheet of paper (or envelope) in the slot between the paper guides.

Hold the paper so that the leading edge is making positive contact with the paper rollers.

Press the paper down hard.

Press the Form Feed key. A form should load. If it did and the Fault light stays on anyway, then press the Clear key.





Load a Cut Sheet

The Manual Path Auto-loads the Next Sheet

When you select the manual paper path, the printer automatically does a paper load following a form feed. During a paper load, the paper feed system slowly advances paper until it senses that the top edge of the paper is where it's supposed to be relative to the striker bar. The maximum distance it will run is about 7 inches, which is more than you need to load a form from the manual path.

This gives you a second or two to stuff another page (or envelope) down the chute without pressing the Form Feed key. This takes a bit of practice; when you miss, just press Form Feed.

In order to take advantage of this, your application needs to send a form feed after every page (or envelope).

Single Envelopes

Printing envelopes one at a time using the manual paper path is tedious, but it can be done. The printer is much more picky about single envelopes than it is about continuous envelopes. Some constraints are:

- The thinner the better. Envelope stock should be 24-pound maximum.
- No windows.
- Beware of wide overfolds.
- Beware of large or embossed logos.

You can't reliably print the first line of the return address right at the top of an envelope that you've fed from the manual paper path. A top margin of as little as 0.1 inch can be enough. This is one of the few instances when it makes sense to set a top margin locally.

Expect to use up some envelopes experimenting to find a combination of paper tension and print gap setting that works. Start with a paper tension setting of 3.

Continuous Envelopes

If you print many envelopes, then you'll want the continuous variety that are packaged on sprocket-feed strips. Load these from the BOTTOM paper path.

Any continuous envelopes designed for impact-matrix printing should work better in this printer than in any other, but test an envelope design before you commit to it. The overfolds of envelopes can be a problem.

For problem envelopes, you can experiment with the MultiPart setting to reduce carriage speed and increase print impact. This is in the Special Modes LCD submenu. On the printed menu, go through the Format menu to the Select Printing Mode submenu.

Clean Up After Non-bonded Paper

If your paper has a high lint or dust content, then paper dust may combine with the ink on the ribbon to form a paste. This paste may accumulate in the ribbon cartridge and on the ribbon guide. It may also build up on the face of the print head and may restrict the movement of the print wires. The following symptoms appear after a short operating period:

- fuzzy characters
- intermittent gaps or missing dots
- light printing occurring before the expected end-of-life of the ribbon

Correct this as follows:

Park paper.

Turn the printer off.

Remove the ribbon cartridge.

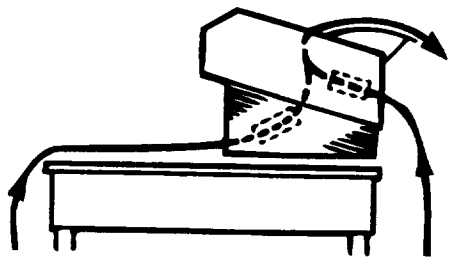
Clean the ribbon guide. Use a foam swab dipped in rubbing alcohol to wipe away accumulated paste. **Don't** use rubbing alcohol with additives like witch hazel or wintergreen.

Clean the face of the print head. Gently wipe away accumulated paste using a foam swab dipped in rubbing alcohol. You can loosen the print head mounting screws to tip the print head up so it's more accessible, but don't unplug the connector.

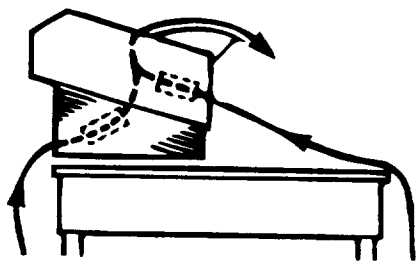
Replace the ribbon.

Tips for Continuous Forms

- If you're using a table or desk for the printer, then place the printer and paper supply so that the paper won't drag on the edge as it enters the printer.



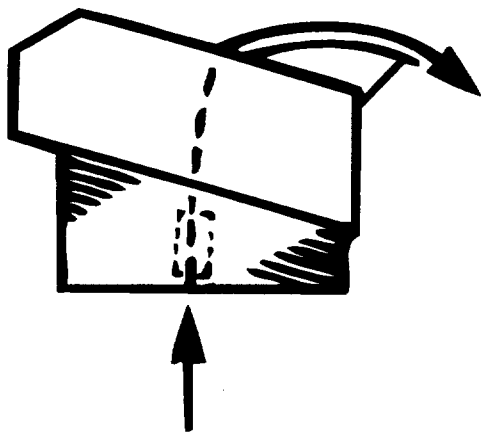
INCORRECT CORRECT



INCORRECT CORRECT

- Place the paper box so that paper flows out of it without dragging on the sides of the box.
- Don't let paper coming out of the printer fall into the supply box.
- Each time you start a new box of paper, bend the flaps down and tape them to the sides of the box. Also pull the sides of the box away from the paper stack to allow clearance.

- If you're printing bar codes, or if you're printing on stiff forms or thick multipart forms, then place the paper supply beneath the printer. Load the forms in the bottom paper path. See "Move the Tractors", page 9 - 4.



- As the paper supply begins to run low, remove the remaining paper stack from the box and place it beneath the printer.
- When printing graphics or bar codes, don't use Tearoff to view the page. Paper moves backwards during a tearoff cycle, and sometimes this causes a tiny error in vertical registration. You'd never see the error when printing text, but an error as small as 1/72 inch shows up as a horizontal stripe in graphics or bar codes.

CAUTION

When printing continuous forms, don't attempt to back the perforation past the print head. This may cause the paper to snag on the print head. The only time you're likely to do this is when you're using Tearoff to view a form.

Chapter 10. Maintenance and Troubleshooting

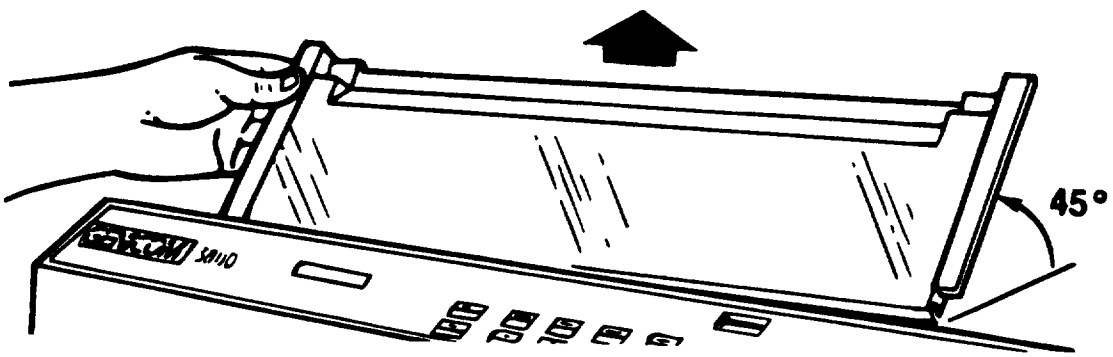
This printer requires very little regular maintenance other than replacing ribbons. The print head is easy to replace. Beyond this, you can adjust the print wire flight time compensation to recover print quality lost through print head or carriage mechanism wear. We also include a description of the hex dump and loopback test features in this chapter.

Clean the Printer

The technicians in our life-test lab clean their printers about once every 500 hours of operation. How often you clean your printer depends on the dust and lint content of the paper you're using.

Warning: Turn off the power switch and unplug the printer from the wall outlet before you clean it. If the printer has been running, then avoid touching the print head before it cools down.

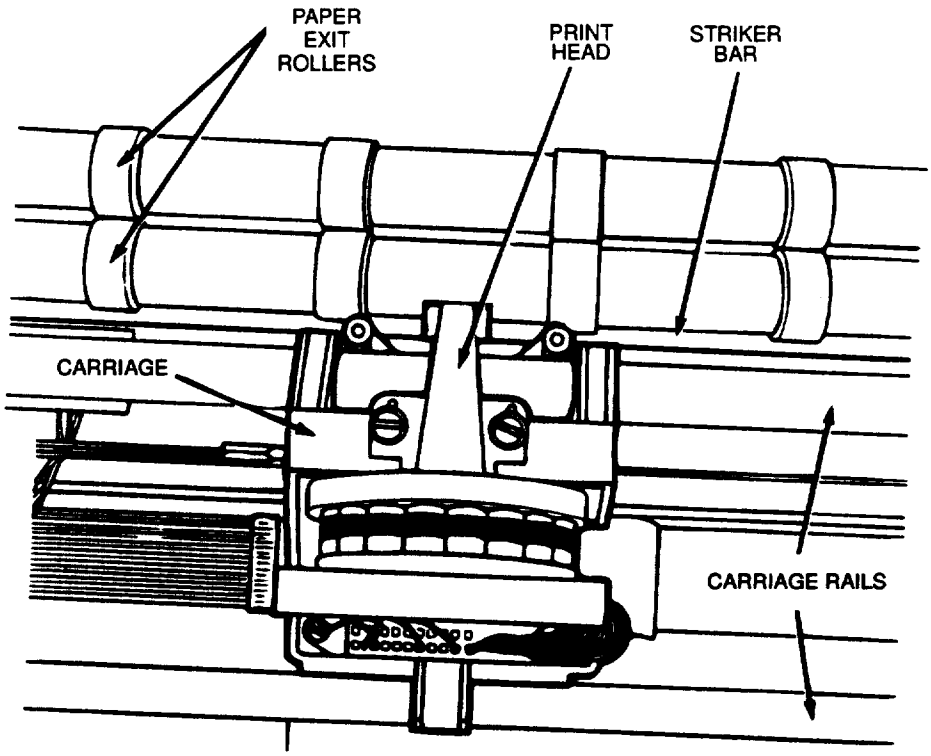
- Remove the top door by raising it approximately one quarter of the way and then lifting it from the printer.



Remove the Top Door

- Remove the ribbon cartridge.

- Use a soft brush or a vacuum cleaner to remove paper dust from inside the printer, especially around the print head, carriage, striker bar, and exit rollers.
- Wipe the carriage rails with a clean dry cloth to remove paper dust. Be careful not to leave fingerprints on the rails.
- Reinstall the ribbon cartridge and top door.



Cleaning Areas Inside Printer

Clean the outside surfaces of your printer with a damp cloth and mild soap cleaner. Do not use strong cleaners or any solvents since these may discolor the surfaces or remove the lettering from the printer. For removing stubborn ink stains, you can use a cream-type commercial hand cleaner such as Go-Jo or GOOP used by mechanics. For best results, allow the hand cleaner to remain on the stained areas for one or two hours, and then wipe the treated areas with a clean absorbent cloth.

Troubleshooting

No control panel lights turned on.	The power cord is not plugged into the wall outlet. The outlet may not work. Check the outlet with a known good appliance.
Printer will not print. The Fault indicator is on.	Printer is out of paper in the active paper path. Reload paper and press the Clear key if Fault light remains on.
	Top door not closed (international models). Close the top door.
	Remote paper park failure. See "Recover from a Remote Path Change Failure", page 9 - 10
Printer will not print.	Paper jam. Clear jam, reload paper and press Clear key if Fault light remains on.
One or more 1-second beeps on power up. Fault indicator flashes in unison with the beeps.	Internal circuit problem. Record the number of beeps, turn printer off, and call for service.
LCD says Factory Tests	Turn off interface dipswitches 7 and 8 on the back of the printer. See page 11 - 10.
Incorrect (garbled) printing when using the serial interface.	Selected speed (baud rate) not compatible with data source. Select the correct menu option for baud rate.
Portions of characters not printing.	Print head too far from paper. Readjust print gap.
	Ribbon guide not placed properly on print head nozzle. Reposition ribbon guide.
	Print head cable loose. Reconnect print head cable.

Portions of characters not printing. (continued)	Paste build-up on face of print head resulting from non-bonded paper. See "Clean up After Non-bonded Paper", page 9 - 16.
	Print head defective. Replace print head.
Light printing or no printing.	Print head too far from paper. Readjust print gap.
	Ribbon worn. Install a new ribbon cartridge.
Smudging of printed characters.	Print head too close to paper. Readjust print gap.
Paper does not feed properly.	Paper not loaded correctly. Reload paper per "Put Paper in the Tractors", page 10 - 10.
	Print head too close to paper. Readjust print gap.
	Paper supply not correctly aligned with paper opening. Reposition paper.
	Ribbon guide not placed properly on print head nozzle. Reposition ribbon guide.
Paper jammed.	Paper damaged on leading edge or not in tractor pins. Remove paper from printer, tear off damaged part, and reinstall per "Put Paper in the Tractors", page 2 - 10. Be sure to remove all damaged paper from the drive roller.
Printer will not print to right end of page.	Right margin set too tight. This often happens when you switch to compressed print; all of the emulations except ANSI set margins in columns. If you're trying to print a spreadsheet at 17 cpi, for instance, then go into your application and set the margin to 17 times the width of your page in inches.
	Paper shear option selected from the hardware options menu limiting line length to 13.2 in. Remove paper shear arm assembly from top of paper shear mechanism and deselect paper shear option (see Appendix B).

Printed menus are unreadable due to very short print lines.

Margins set too tight in the format assigned to the current paper path. Press the [First], [1], [1] keys to get out of the printed menu. Use another paper path, or note the format assigned to the current paper path and temporarily use a format with wider margins.

When attempting to go offline, the display switches to "ONLINE:ENTR CODE" and the Mode and On Line lights flash continuously.

Online lock has been entered from the host. Enter the correct code or as a last resort, initialize the the printer. See "Lock the Printer Online", page 5 - 2.

When attempting to enter the printed menu, the display switches to "Prog :ENTR CODE."

Menu lockout has been set. Enter the correct code or as a last resort, initialize the printer. See "Lock the Printed Menu", page 5 - 3.

Hex Dump

Sometimes when your printer isn't printing what you expect, it's because the host isn't sending the right control sequences. The hex dump feature lets you see every byte of data that's sent from the host. You'll need to look at the chapter in the Programmer's Manual that applies to the emulation you're using in order to interpret the hex dump printout.

You can choose between two presentations of hex dump: standard and enhanced. Each lists on the first line of the printout the status of certain signals on the currently selected hardware interface. The standard presentation shows every byte of received data in hexadecimal; this is reminiscent of what you'd see if you dumped a file using DOS DEBUG. The enhanced hex dump prints mnemonics in place control codes such as escape, carriage return, line feed, form feed, and so forth.

On the printed menu, find hex dump in Test Options, which is under Interface Parameters. On the LCD menu, hex dump is under Utility.

To dump the last line, push the OnLine key twice. You can reset hex dump by cycling power to the printer; the printer won't power up in hex dump.

Let's say you were in one of the IBM emulations and received the string "Mary had a little lamb" where the word "little" was in boldface.

Mary had a **little** lamb.

The enhanced hex dump of the string above would look like:

```
BUSY HI FAULT- LI PE HI SLCT HA SLCT IN- A
M a r y SP h a d SP a SP ESC E L i t
t l e SP ESC F l a m b . CR LF
BUSY HI FAULT- LI PE HI SLCT HA SLCT IN- A
```

If you check the IBM chapter in the Programmer's Manual, you'll find that ESC E turns on boldface, and ESC F turns it off again.

Loopback Test

If you're using serial interface, then you can run a loopback test, for 80-column or 132-column as appropriate, from the Test Options menu. Test Options is under Interface Parameters on the printed menu. To run this test, you must have a loopback plug for the serial interface connector with the following pins hooked together: 2-3, 4-5, and 6-20. See the Service Manual, GEK-88731, for more details. Correct printing of the test pattern in the loopback mode indicates that both the transmit and receive circuits in the printer are working correctly.

Replace the Print Head

Sometimes it's obvious that you have to replace a print head. If a print wire is sticking out of the nozzle and tearing the ribbon, then there's no doubt as to what needs to be done.

If you're consistently missing one dot, then the problem could be the print head, the print head cable, or a wire-driver circuit. The easiest way to determine which problem you have is to replace the print head. If that doesn't fix the problem, then try the cable.

If you're experiencing gradually deteriorating print quality, however, then you should try the following before you replace the print head:

- Make sure the print head mounting screws are tight.
- Do the cleaning process described in "Clean Up After Non-bonded Paper", page 9 - 16.
- Put a fresh ribbon in the printer.
- Experiment with the print gap setting. See page 2 - 17.
- Compare unidirectional print quality with bidirectional print quality. If unidirectional looks good, then adjust the flight time compensation per instructions in the following section.

Remove the Print Head

1. Park paper in the active paper path (press Park/Path key).

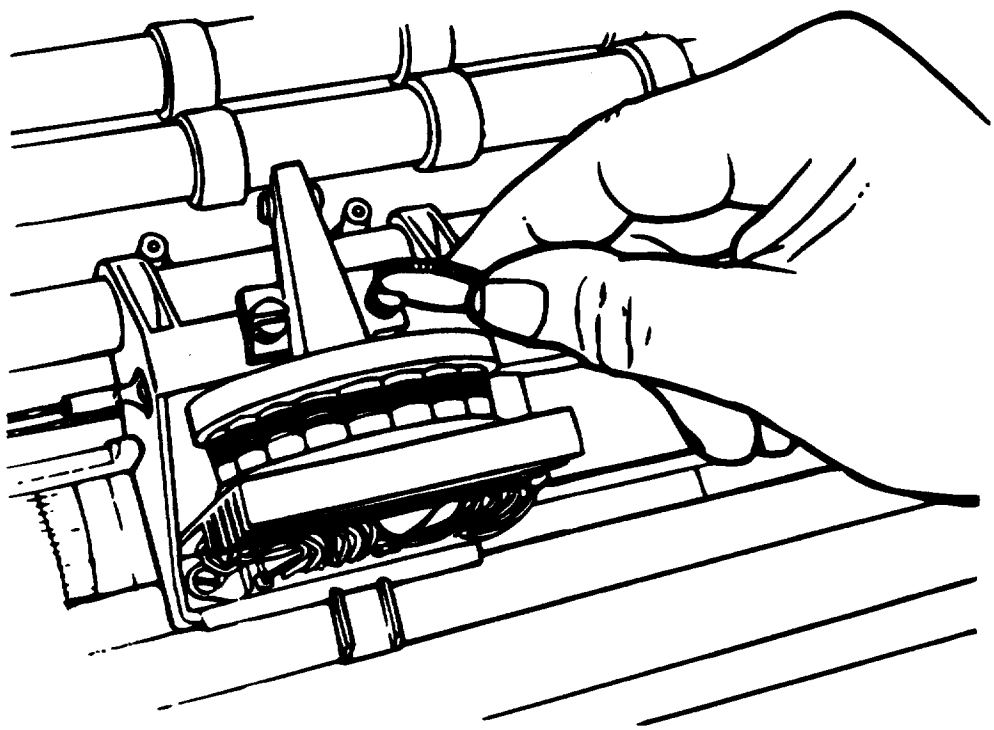
2. Turn power off, and unplug the printer from the wall outlet.

3. Remove the top door.

4. Find the print gap adjust lever on the inside right wall of the printer. Push it to release it from the notch and open it all the way to the RIBBON CHANGE position.

5. Remove the ribbon cartridge.

6. Move the print head to the middle of the printer.

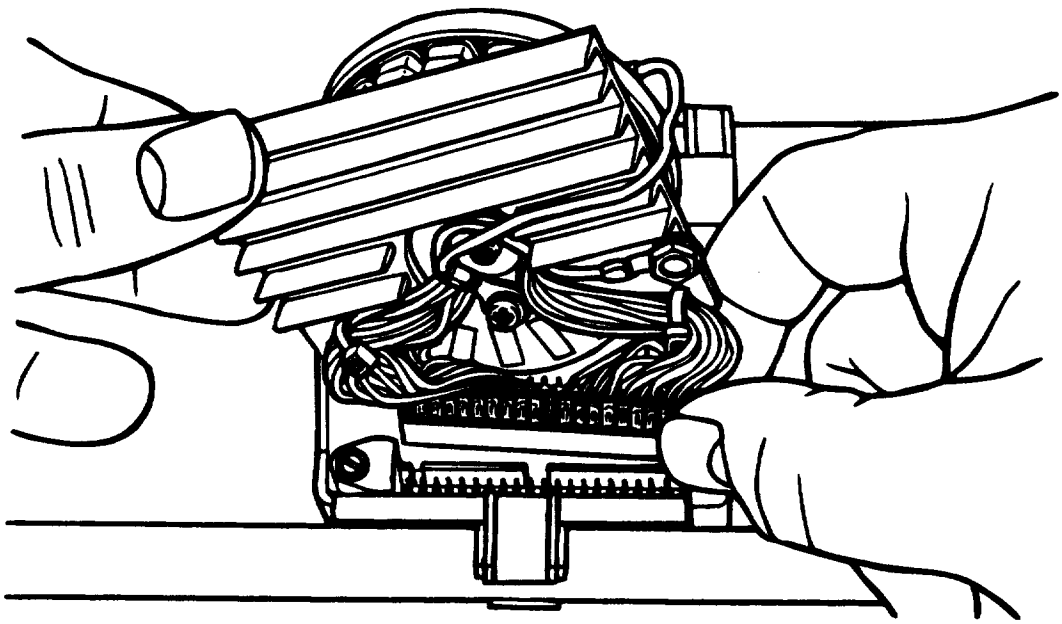


Loosening the Print Head Screws

7. Remove the two print head screws. You can use a coin, such as a quarter, to loosen the screws.

8. Lift the print head off the carriage.

9. Remove the print head connector by pulling up on each side of it. Do not remove the print head cable or cable retainer from the carriage.



Removing the Print Head Connector

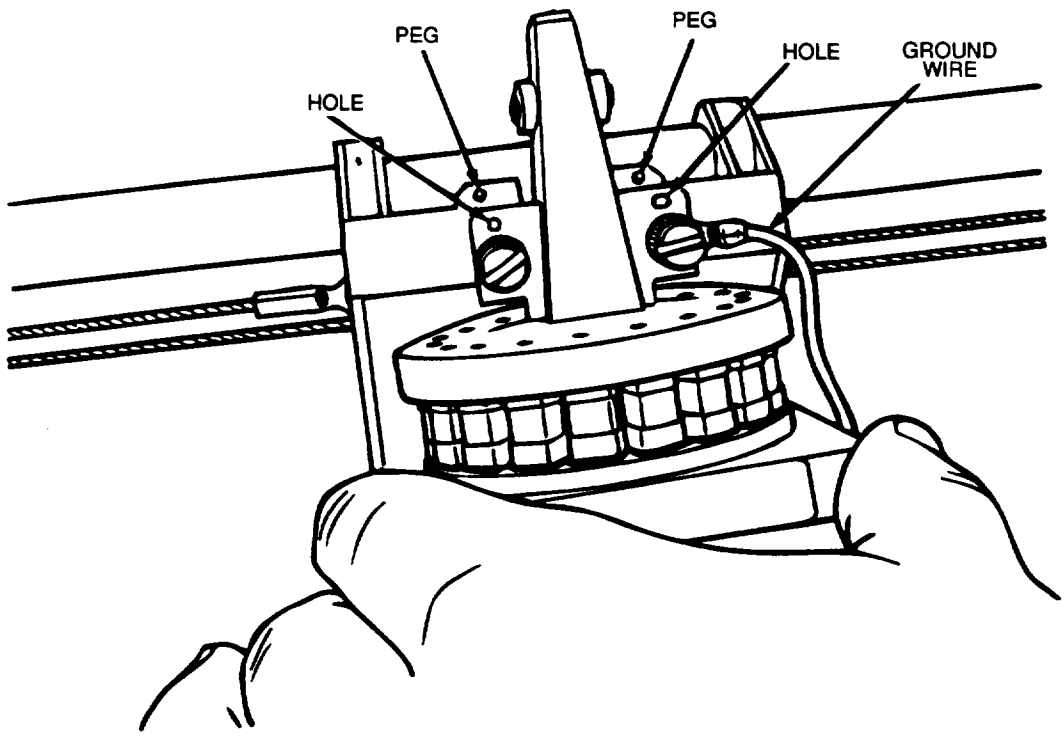
Install the Print Head

1. Attach the print head connector to the connector in the carriage. Make sure it's firmly connected.

2. Place the print head on the carriage.

3. Insert the two small locating pegs on the top of the carriage into the two mating holes on the bottom of the print head.

4. Make sure the black ground wire is under the right-hand screw.



Alignment Pegs on Carriage

5. Tighten the print head screws. You can use a coin, such as a quarter, to tighten these screws.

Replace the ribbon cartridge.

1. Replace the top door, and plug the printer into the wall outlet.

2 .Turn the printer on and load paper (press FF/Load key). If a form loaded and the fault light stays on, then press the Clear key.

3. Check the print gap. See Page 2 - 17.

4. Check the flight-time compensation per the next section.

Adjust the Flight-Time Compensation

Flight-time compensation affects the horizontal placement of dots during bidirectional printing. The traditional way to check it is to print full pages of nothing but uppercase "H" in bidirectional draft. If the vertical lines in the "H" wave back and forth from one line of characters to the next, then the adjustment is off.

Another way to tell if flight-time compensation is off is to compare unidirectional letter-quality print with bidirectional letter-quality. If Unidirectional looks good but bidirectional looks like shadow printing, then it's an indication that this parameter needs adjusting. You might expect to check this when:

- Your printer has seen a lot of service.
- You've replaced a print head.
- You've replaced a carriage-mechanism component, such as a drive cable.
- You've installed a software upgrade.

CAUTION

The flight time test patterns are long lines! Make sure you have full-width (13.6-inch printing area) paper in the current paper path. If a paper shear is installed, then be sure to remove the blade before you do this procedure!

1. Make sure the print gap is set correctly to avoid adjustment errors.

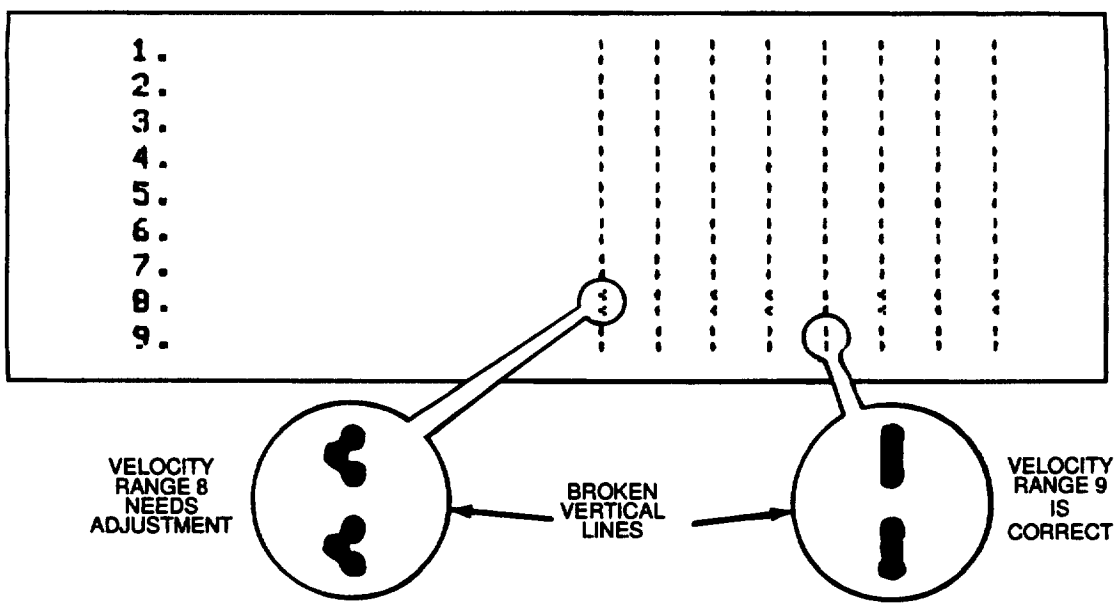
2. With the printer offline, press the [Enter] key to enter the LCD menu and then select "Prog :PrMenu" to enter the program mode and get a main menu printout.

3. After the main menu prints out, press [9], [9], and [Enter] to enter the hardware configuration menu (the menu prints out).

4. Press [3] and [Enter] to enter the adjust flight time menu, which prints out as follows:

1. Velocity Range 1
2. Velocity Range 2
3. Velocity Range 3
4. Velocity Range 4
5. Velocity Range 5
6. Velocity Range 6
7. Velocity Range 7
8. Velocity Range 8
9. Velocity Range 9
10. Print All Current Flight Time Patterns

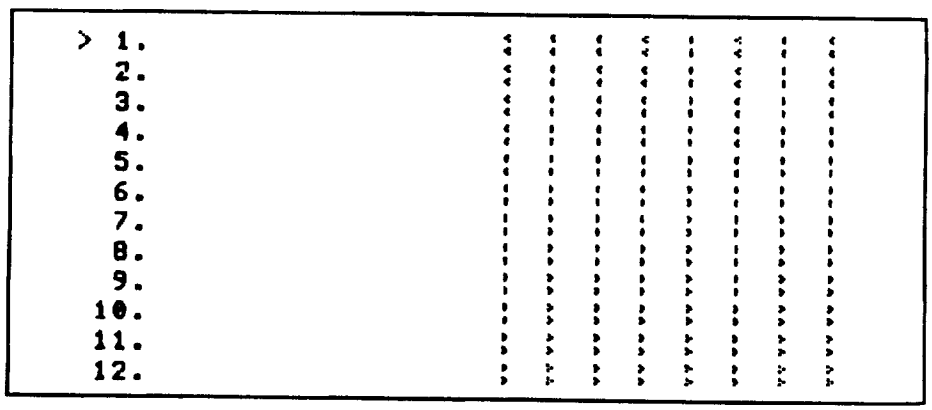
5. Press [1], [0], and [Enter] to print all current flight time patterns as shown in the sample below:



6. The nine flight time patterns (rows of broken vertical lines) correspond to the nine velocity ranges used in the printer. If any of the broken vertical lines in a pattern are not straight (see enlarged samples above), then you need to adjust the flight time for that velocity range.

Press the numbered key for the velocity range you need to adjust and then press [Enter]. For example, to make the correct adjustment for the sample above, press [8] and then [Enter].

Twelve flight time patterns print out as shown in the sample below.



7. The pattern represented by the flight time that is currently set in the printer for the selected velocity range is designated by the symbol. Examine the twelve printed patterns in your print out and pick out the one with the straightest broken vertical lines. Press the numbered key corresponding to your selected pattern and then [Enter]. The flight time you selected prints out.

8. Check your adjustment by reprinting the flight time patterns for the nine velocity ranges (see step 5). If others are out of adjustment, repeat steps 6 and 7 until all patterns for all nine velocity ranges are correct.

9. When you are finished making changes, exit through the main menu.

Chapter 11. Interface

The printer is equipped with both a serial and a parallel interface as standard. This chapter gives you information about both of these interfaces.

RS-232C Serial Interface

All signal levels conform to EIA RS-232C/CCITT V.24. The interface is extensively configurable from the printed menu. See Chapter 4. The printed status report shows the current settings for the serial interface when it is active.

Serial parameters that can be controlled from the printed menu include:

- Baud rate
- Parity
- Ready-busy control using DC1/DC3, CA, SCA, or CD
- Select-deselect using DC1/DC3, CA, SCA, or CD
- Fault reporting using DC1/DC3, CA, SCA, or CD
- CB (clear to send) or CC (data set ready) used to control transmission
- Lead polarity high or low for CD, CA, SCA, CB, and CC
- ETX (end of text)/ACK (acknowledge) protocol
- Receive buffer size - see page 4 - 14.

Serial Parameters

In order for devices to communicate via RS-232, the character frames (baud rate, number of data bits, parity, number of stop bits), as well as the handshaking, must be set the same at the transmitter and receiver.

The factory default settings for the character frame are: 9600 baud, 1 start bit, eight data bits, one stop bit. The factory defaults for parity are: ignore received parity, transmit even parity.

The computer expects to get the READY/BUSY status (handshaking) and fault status from the printer by receiving a special character (busy by code), or by reading the DC voltage on one or more of several signal wires (busy by level).

At the time we ship the printer, it is set to indicate READY/BUSY by code (XON/XOFF) and also by level (DTR and SRTS). A fault condition is reflected in XON/XOFF and DTR.

DOS Machines

For those of you using personal computers, the default handshaking is compatible, and the default character frame matches the DOS defaults. You should always set DOS serial parameters explicitly with the MODE command, however.

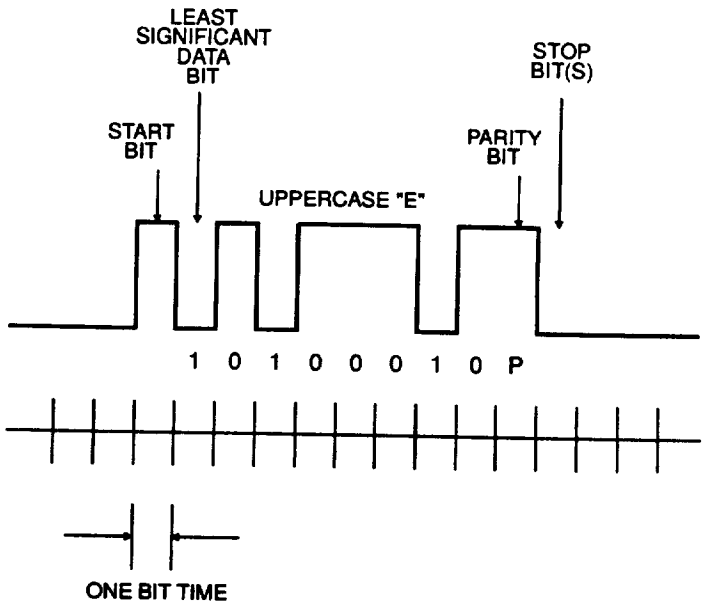
Seven or Eight Data Bits

A few years ago, a typical character-imaging device (CRT terminal or printer) would render about 94 symbols. This reflects the limits of the teletype machine, which is a conceptual descendent of the typewriter. It only takes seven bits of data to select among 128 symbols or control codes.

When seven-bit data is used, the eighth bit in the byte is often used as a parity bit. The parity bit might be set so that the number of ones in the byte is always even (even parity) or always odd (odd parity). This serves as an error check. The parity bit can also be set to always be zero (space) or always be one (mark).

As character-imaging devices have come to support more symbols, such as line-draw symbols and characters from non-English alphabets, a common method for transmitting these additional characters is to use the eighth bit for data.

In RS-232, the least significant bit (LSB) is sent first, and the MSB is sent last. For characters 00 hex - 7F hex, the first seven bits are the same for 8-bit as for 7-bit communications

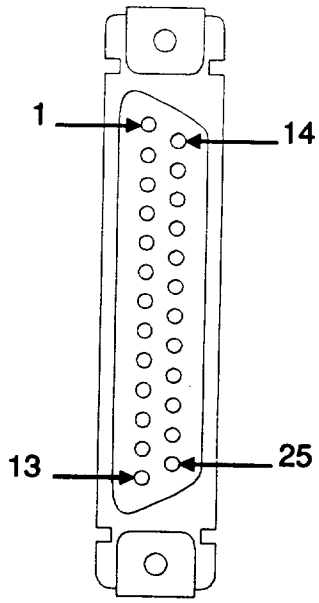


Transmitted Parity

NOTE that if the computer expects busy-by-code handshaking (XON/XOFF or ETX/ACK) then transmitted parity at the printer must match the host. Even if you set the printer to IGNORE RECEIVED PARITY, you must set parity to match the host if you're using busy-by-code, otherwise you'll fill up the printer's buffer and lose data.

Serial Data Cable

The serial interface connector is a 25-pin female connector located on the back of the printer.



The serial interface data cable requires the following or equivalent parts to mate with the female connector on the printer:

- Cannon 25-pin plug DBM-25P
- Cannon shell DB115339-22
- Screws #4 - 40 x 1/8 (2 required)

Serial Pin Assignments

A +5 volt supply is brought out on pins 22, 23, and 24. The maximum current available from these three pins combined is 1.5 amps.

Pin	Name	Circuit Description
1	AA	Protective ground
2	BA	Transmitted data from the printer
3	BB	Received data from the data source
4	CA	Request to send from the printer
5	CB	Clear to send from the data source
6	CC	Data set ready to receive data
7	AB	Signal ground
8		Not used
12,15,17	0V	+12V, -12V, +5V return
9	+12V	+12 volts, 250 milliamps (maximum)
10	-12V	-12 volts, 250 milliamps (maximum)
11,19	SCA	Secondary request to send
13	SCB	Secondary clear to send
14,16,18,21		Not used
20	CD	Data terminal ready
22	+5V	+5 volts, 500 milliamps (maximum)
23	+5V	+5 volts, 500 milliamps (maximum)
24	+5V	+5 volts, 500 milliamps (maximum)
*25	SCA	Secondary request to send

* Pin 25 is either connected to SCA in the printer or floats depending the status of switch 3 on the back of the printer. See "Interface Option Switches" page 11 - 10.

Centronics Parallel Interface

With this interface, 7- or 8-bit parallel data is accepted by the printer on a READY/BUSY closed loop basis at data transfer rates of up to 3.0 kilobytes per second. When the printer is on-line with a parallel data source, data is strobed into the printer one character at a time. A signal from the printer acknowledges receipt of each character.

Parallel interface configurations that may be selected from the menu are as follows:

- Lead control using the busy lead, fault lead, ACK lead or SLCT (select) lead
- Select/deselect (online/offline) using the busy lead or the fault lead
- ACK pulsed during busy (not busy)
- ACK sent for offline to online transition
- ACK inhibited for online to offline transition
- ACK inhibited for paper out condition
- ACK inhibited for fault condition
- Lead polarity high or low for ACK, busy, and strobe leads
- Prime on select
- Prime on received DEL (delete) code
- Select/deselect by received DC1/DC3 codes

Parallel Interface Signals

$\overline{\text{DATA STROBE}}$: Input from the data source used to transfer data into the printer logic. Minimum pulse duration is 0.4 microseconds. You can set STROBE polarity from the printed menu.

DATA BITS 1-8: Input character /control code byte from the data source. High level represents a binary 1 and low level a 0. Data setup time is not necessary and the strobe pulse can be generated concurrently with data.

$\overline{\text{ACKNOWLEDGE}}$: A pulse that is generated by the printer to indicate receipt of a character. Menu options allow you to selectively enable or disable the pulse for any fault, paper out, or deselect state; to set the pulse polarity; and to set the position of the pulse relative to busy.

BUSY: A signal generated by the printer to inhibit transmission from the data source. Menu options are provided to inhibit transmission from the data source, to produce either a positive or negative signal, and to reflect fault, paper out, and deselect states.

PAPER OUT: Output - high when a paper-out condition is true.

SELECT: Output - high when the printer is online .

$\overline{\text{PRIME}}$: An input signal . If low for more than 50 microseconds, then the input buffer can be optionally cleared.

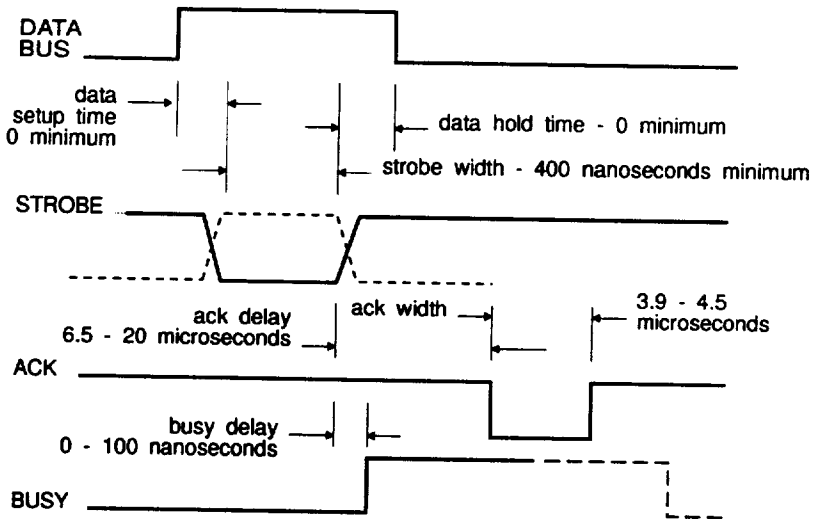
$\overline{\text{FAULT}}$: An active low signal generated by the printer to indicate a printer fault condition.

$\overline{\text{AUTO LINE FEED XT}}$: Input signal active low that causes an automatic LF on receipt of a CR. This signal is latched on the rising edge of a strobe.

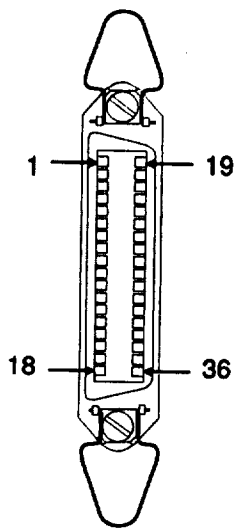
$\overline{\text{SELECT IN}}$: Input signal active low that enables the printer to accept data. Optionally, if high, the printer discards any received data.

+5 VOLTS: This voltage is available on two interface pins for supplying power to external devices.

Parallel Timing Diagram



Parallel Data Cable



The parallel interface data cable requires a 36-pin male connector (Amphenol part number 57-30360 or equivalent) to mate with the female connector on the back of the printer.

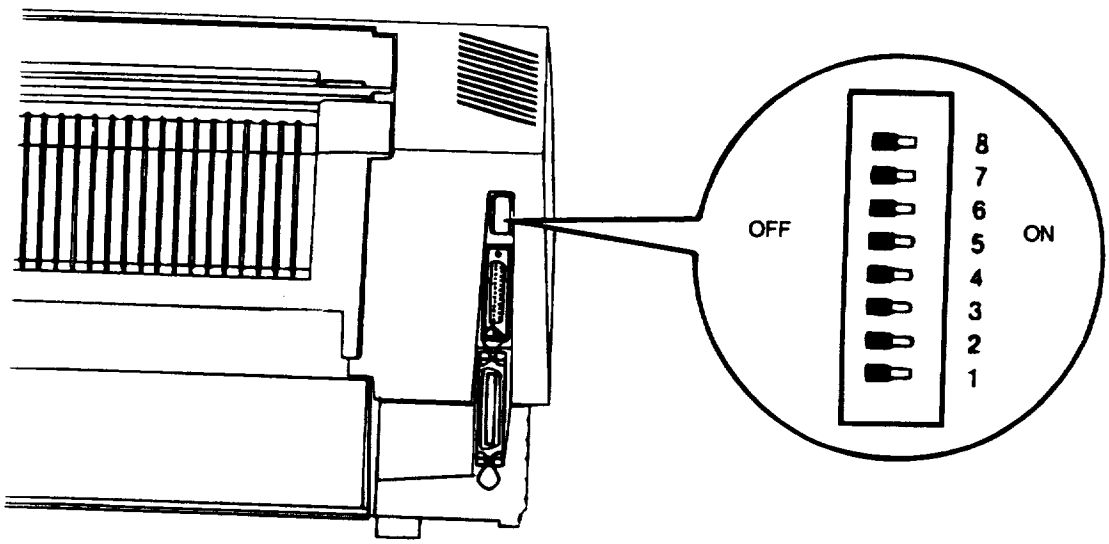
Note: Maximum output power for pins 18 and 35 combined is +5 volts, 1.5 amps.

Parallel Interface Pin Assignments		
Pin	Signal	Active Status
1	$\overline{\text{Strobe}}$	Active high or low input
2	Data Bit 1	
3	Data Bit 2	
4	Data Bit 3	
5	Data Bit 4	
6	Data Bit 5	
7	Data Bit 6	
8	Data Bit 7	
9	Data Bit 8	
10	$\overline{\text{ACK}}$	Active high or low output
11	Busy	Active high or low output
12	Paper out	Active high output
13	Select	Active high output
14	Auto LF XT	Active low input
15,30,33,34	Unused	
16, 19-29		Signal ground (0V)
17	Frame ground	
18	+5V, 750 mA (max.)	
31	$\overline{\text{Prime}}$	Active low input
32	$\overline{\text{Fault}}$	Active low output
35	+5V, 750 mA (max.)	
36	$\overline{\text{Select in}}$	Active low input

Interface Option Switches

The interface option switches are located at the left rear of the printer and can be set to meet special system requirements.

When we ship the printer, all of the switches are off.



Switch Locations

Interface Option Switches		
Switch	State	Function
1	SELECT IN - parallel interface pin 36	
	*OFF	Controlled by source
	ON	Always permissive
2	AUTO FEED XT parallel interface - pin 14	
	*OFF	Controlled by source
	ON	Always active
3	SCA (Secondary Request to Send) serial interface pins 11,19 and 25	
	*OFF	SCA on pins 11 and 19
	ON	SCA on pins 11, 19 and 25
4	Reserved	
5	Reserved	
6	Reserved	
7	Factory Tests	
	*OFF	No effect
	ON	If switch 8 is on, then Factory Tests.
8	Factory Tests	
	*OFF	No effect
	ON	Factory Tests.

* Standard factory setting for all switches is off (towards your left as you face the back of the printer).

Both of switches 7 and 8 should always be off.

Appendix A. Hardware Configuration Menu

The Hardware Configuration menu is a hidden submenu (item 99) off the main printed menu. It's used to:

- Change hardware options
- Adjust the print wire flight time

Another selection in the hardware configuration menu is labeled "Print head Type Menu" and is reserved for future use. Directions for adjusting the flight-time compensation of the print wires are found in "Adjust the Flight-Time Compensation", page 10 - 11.

Changing Hardware Options

Here's what you might see in the hardware options menu:

>1. Manual Sheet Feeder (Rear)

>2. Tractors (Rear)

>3. Tractors (Bottom/Front)

4. Paper Shear

Note: When the paper shear is selected, the right margin is limited to 13.2 inches.

Whenever one of these options is added or removed from the printer, the option must likewise be selected or deselected on the menu. The arrow indicates options installed. Options 1, 2, and 3 are selected in the sample above.

To change a hardware option:

1. With the printer offline, press the [Enter] key to enter the LCD menu and then select "Prog :PrMenu" to enter the program mode and get a main menu printout.

2. After the main menu prints out, press [9], [9], and [Enter] to enter the hardware configuration menu (the menu prints out).

3. Press [2] and [Enter] to enter the hardware options menu (a list prints out).

4. To select or deselect an option, press the numbered key(s) for the number of the option that you want to change and then press [Enter]. The hardware options menu prints out each time you press [Enter] to show you the changed option status.

5. When you are finished making changes, exit through the main menu.

Appendix B. Options and Supplies

Phone Numbers

Supplies 1-800-848-8855
General Information 1-800-4-GENICOM

Ribbons

Ribbon Cartridge 3A0100B02
Bar code, OCR high-carbon ribbon 3A0100B03

Font Cards

Cyrillic and Greek Math 3A0110B08S
Courier and Orator Dingbats 3A0110B09S
Ball Script and Commercial Script 3A0110B13S
Orator 3A0110B15S
Orator Italic 3A0110B16S
Prestige and Prestige Italic 3A0110B17S
Tall Micro Gothic 3A0110B18S

Interface Kit

RS-422 . . . . . 3A0279B01

Paper Handling Options

Pedestal 3A0111B02
Paper tray (for pedestal) 3A0112B01
Paper output rack (for printer) 3A0113B01
Paper basket 3A0120B01
Paper Shear Option 3A0123B01

Print Head

Print head, 18-wire, parallel 64007385-5001

Packaging

Shipping Container 3C0921G01

Appendix C. Specifications

This appendix shows the printer's specifications.

Performance

Maximum Printing Speed:

- 600 cps data processing (12 cpi)
- 500 cps data processing (10 cpi)
- 150 cps letter quality (12 cpi)
- 125 cps letter quality (10 cpi)

Throughput: Throughput (average printing speed) is approximately 80% of the maximum printing speed (see above).

Serial Data Buffer: 64K selectable in 1K increments

Physical

Width:	26.9 in. (683mm)
Height:	12.1 in. (307 mm)
Depth:	13.9 in. (353 mm)
Weight:	52 lbs. (23.4 kg) **Note:** Printer is UPS shippable

Electrical

Voltage: 115 or 230 VAC ± 15%

Frequency: 50 or 60 Hz ± 2 Hz

Power Consumption:

Standby: 35 watts - Printing: 130 watts

Data Transmission

Code: USASCII/ISO 7- or 8-bit

Interface: Dual RS232C serial and Centronics parallel

Speed (serial interface): 110, 300, 600, 1200, 2400, 4800, 9600 and 19200 baud

Speed (parallel interface): 3 Kbytes

Data connectors: 25-pin type DB female and 36-pin Amphenol/57-40360

Paper Handling

Paper Paths: Rear, front/bottom and manual. Any of the four stored user-defined formats, including page and print settings, can be assigned to any of the three paper paths.

Zero Tearoff Feature: Adjustable for distance

Paper Loading and Parking: Automatic

Top of Form Setting: Automatic

Paper Drive: 6-pin push tractor relocatable for either rear or front/bottom feed. Friction feed for top (manual) feed.

Paper Width:

continuous forms 3 to 16 in.

single cut sheets 3.5 to 17 in. wide X 5 to 17 in. long with a minimum width to length ratio of 0.45

Maximum Number of Copies: Original plus five

Maximum Forms Set Thickness: 0.025 in.

Paper Slew: 15 in./sec default, 5 in./sec user-selectable

Paper Positioning: Horizontal any position; vertical within 1/72 in.

Protocols

- ANSI X3.64
- Bar Codes: 24 Resident styles, scalable and rotatable. See ANSI chapter in *Programmer's Manual.*
- Oversized Font: Rotatable, expandable to 18,700 points in 10-point increments. See ANSI chapter in *Programmer's Manual.*
- IBMGP
- IBM Proprinter XL
- Epson FX286e
- DEC LA210

Print Technology

Type: Matrix impact

Print Head: 18-wire parallel (two 9-wire arrays)

Direction of Printing: Bidirectional, logic seeking or unidirectional (operator-selectable)

Print Modes: Proportional, compressed, shadow, double strike, underline, expanded, superscripts and subscripts

Character Sets: IBM Set I, II and All Character sets plus 18 international character sets

Head Slew: 50 in./sec maximum LF Interval: 35 msec at 6 lpi

Character Spacing: 10, 12, 13.1, 15, 16.7, 17.1 cpi plus program-selectable

Line Spacing: 3, 4, 6, 8 lpi plus n/144 in.

Print Line: With no paper shear - 13.6 in.

Single part forms with paper shear - 13.2 in.

Multipart forms with paper shear - 12.7 in.

Print Styles:

Standard: Gothic and Courier in both DP and LQ;

Optional: fonts available on plug-in cards

Dot Graphics Resolution:

Horizontal 60 to 400 dpi (protocol dependent)

Vertical 72 or 144 dpi (protocol dependent)

Ribbon Cartridge: Type of material nylon; ribbon life 15 million characters at data processing (draft) resolution.

Form Control

Margins:

Left and right: any position

Top and bottom: any position

Horizontal Tabs: 22, 28, or 32 absolute or relative (emulation dependent)

Vertical Tabs: 12, 16, or 64 absolute or relative (emulation dependent)

Maximum Form Length: 22 in.

Appendix D. Load Length Adjustment

Load length is the distance that a form is advanced beyond the point of actuation of the paper out switch when that form is loaded following an ISU. The load length adjustment is correct when, following an ISU, the absolute top edge of the form is loaded aligned with the topmost print wire on the print head.

The load length adjustment is carefully set at the factory and should not need to be touched unless somebody has inadvertently changed the setting during an ISU, or unless the paper-out switch has been replaced. If the load length adjustment is high, then you risk printing on the striker bar during a low paper condition; if low, then you can print on the striker bar on the first line of the first form. An error in either direction compromises the accuracy of any vertical settings relative to the absolute top edge of the form.

The following procedure requires that you ISU the printer twice. This is not a mistake; it is the most straightforward way to make sure any print references or vertical margins get cleared. It is important that the load length adjustment be performed as described below. **DO NOT** use the load length adjustment to establish any top margin, however small.

1. Turn printer power off.

2. Press and hold the control panel keys numbered 1 and 2.

3. While holding keys 1 and 2, turn the printer power on. The printer will power up with the Fault light flashing.

4. Wait for the printer to beep.

5. Release keys 1 and 2.

6. Press the Clear key to acknowledge the ISU.

7. With the printer offline, press the PARK key to park paper in the current path; then press the FF/LOAD key to reload it. This positions the absolute top-of-form according to the load length adjustment.

8. Press the Clear key.

9. The topmost print wire on the print head should be just barely below the absolute top edge of the form. You can verify this by printing a line of test pattern as described in "Print a Test Pattern", page 2-15, or you can send a line of data from the host. The topmost printed dot should be entirely on the form but not more than 1/32 inch below the absolute top edge of the form. If this is true, then no adjustment is necessary. If not, then proceed as follows:

10. Park paper and then reload it.

11. Turn printer power off.

12. Press and hold the control panel keys numbered 1 and 2.

13. While holding keys 1 and 2, turn the printer power on. The printer will power up with the Fault light flashing.

14. Wait for the printer to beep.

15. Release keys 1 and 2.

16. While the Fault light is flashing, use the up- and down-arrow keys to align the absolute top edge of the form with the topmost wire on the print head.

17. Press the Clear key to acknowledge the ISU.

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